

FIG. I

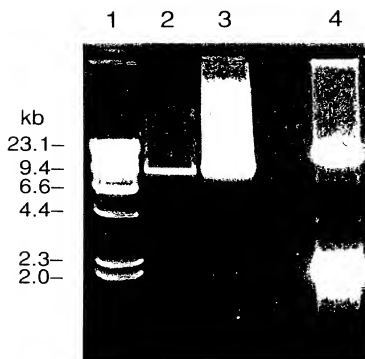


FIG. 2

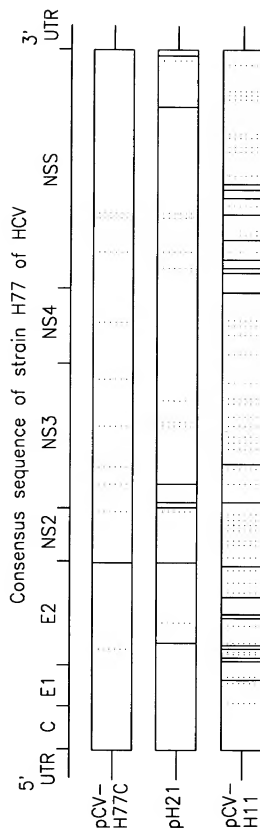


FIG. 3

H77C

10	20	30	40	50	
1234567890	1234567890	1234567890	1234567890	1234567890	
GCCAGCCCC	TGATGGGGG	GACACTCCAC	CATGAATCAC	TCCCCGTGTA	50
GGAACTACTG	TCTTCACGCA	GAAAGGCTCT	AGCCATGGCG	TTAGTATGAG	100
TGTGCTGCAG	CCTCCAGGAC	CCCCCTCC	GGGAGAGCCA	TAGTGGTCTG	150
CGGAAACGGT	GAGTACACCG	GAATTGCCAG	GACGACGGG	TCCTTTCTTG	200
GATAAACCCG	CTCAATGCTT	GGAGATTTGG	GCGTGCCCC	GCAAGACTGC	250
TAGCCGAGTA	GTTGTTGGGTC	GCGAAAGGCG	TTGTGGTACT	GOCTGATAGG	300
GTGCTTGCGA	GTGCCCCGGG	AGGTCCTGTA	GACCGTGAC	CATGAGCACG	350
AATCTAAAC	CTCAAAGAAA	AACCAAAAGT	AACACCAACC	GTGCCCCACA	400
GGAGTCAAG	TTCCCGGGTG	GCGGTCAGAT	CGTTGGTGGA	GTTTACTTTGT	450
TGCGCGCCAG	GGGCCCTAGA	TTGGGTGTGC	GCGGACGAG	GAAGACTTCC	500
GAGCGGTCCG	AACCTCGAGG	TAGACGTCAG	CCTATCCCCA	AGGCAAGTCG	550
GCCCGAGGGC	AGGACCTGGG	CTCAGGCCGG	GTACCCCTTG	CCCTCTATG	600
GCAATGAGGG	TTGCGGGTGG	GCGGGATGGC	TCCTGTCTCC	CGTGGCTCT	650
CGGCTTAGCT	GGGGCCCCAC	AGACCCCCCG	CGTAGGGTCC	GCAATTTGGG	700
TAAGGTCACT	GATACCTTTA	CGTGGGCTTT	CGCCGACCTC	ATGGGGTACA	750
TACCGCTCGT	CGCGGCCCTT	CTTGAGGGCG	CTGCCAGGGC	CCTGGCCGAT	800
GGCGTCCGGG	TTCTGGAAGA	CGCGGTGAAC	TATGCAACAG	GGAACTTCC	850
TGGTTGCTCT	TTCTCTATCT	TCCTTCTGGC	CCTGCTCTCT	TGCGTACTG	900
TGCGCGCTTC	AGCCTACCAA	GTGCGCAATT	CCTCGGGGCT	TTACCATGTC	950
ACCAATGATT	GCCTTAACCT	GAGTATTGTG	TACGAGGCGG	CCGATGCCAT	1000
CCTGCACACT	CCGGGGTGTG	TCCCTTGCGT	TCGCGAGGGT	AACGCCCTGA	1050
GGTGTGCGGT	GGCGGTGACC	CCACCGGTGG	CCACCAGGGA	CGGCAAACTC	1100
CCCACAACGC	AGCTTCCAGC	TCATATCGAT	CTGCTTTGTG	GGAGCGCCAC	1150
CCTCTGCTCG	GCCCTCTACG	TGGGGGACCT	GTGCGGGTCT	GTCTTTCTTG	1200
TTTGTCAACT	GTTTACTTTC	TCTCCAGGC	GCCACTGGAC	GACGCAAGC	1250
TGCAATTGTT	CTATCTATCC	CGGCCATATA	ACGGGTCACT	GCAATGGCATG	1300
GGATATGATG	ATGAAGTGGT	CCCTTACGGC	AGCGTTGGTG	GTAGCTCAGC	1350
TGCTCCGGAT	CCCAACAGCC	ATCATGGACA	TGATCGCTGG	TGCTCACTGG	1400
GGAGTCTCG	CGGGCATAGC	GTATTTCTCC	ATGGTGGGGA	ACTGGGGGAA	1450
GGTCTGGTGA	GTCCTGCTGC	TATTTGCGCG	CGTCGACGGG	GAAACCCACG	1500
TCACCGGGGG	AAATGCCGGC	CGCACCAACG	CTGGGCTTGT	TGGTCTCCTT	1550
ACACCAGGCG	CCAAGCAGAA	CATCCAACTG	ATCAACACCA	ACCGCAGTTG	1600
GCACATCAAT	AGCACGGGCT	TGAATTGCAA	TGAAAGCCTT	AACACGGGCT	1650
GGTTAGCAGG	GCTCTTCTAT	CAACACAAAT	TCAACTCTTC	AGGCTGTGCT	1700
GAGAGGTTGG	CCAGCTGCCG	ACGCTTTACC	GATTTTGCCC	AGGGCTGGGG	1750
TCCTATCAGT	TATGCCAACG	GAAGCGGCTT	CGACGAACGC	CCCTACTGCT	1800
GGCACTACCC	TCCAGACCTT	TGTGGCATTG	TGCCCCGAAA	GAGGTTGTGT	1850
GGCCCGGTAT	ATTGCTTCAC	TCCAGCCCC	GTGGTGGTGG	GAACGACCGA	1900

FIG. 4A

H77C

10	20	30	40	50	
1234567890	1234567890	1234567890	1234567890	1234567890	
CAGGTCGGGC	GCGCTTACT	ACAGCTGGGG	TGCAAAATGAT	ACGGATGTCT	1950
TGTCTCTTAA	CAACACCAGG	CCACCGCTGG	GCAATTGGTT	CGGTTGTACC	2000
TGGATGAACT	CAACTGGATT	CACCAAGTGG	TGCGGAGCGC	CCCTTGIGT	2050
CATCGGAGGG	GTGGGCAACA	ACAOCCTTGT	CTGCCCCACT	GATTGCTTCC	2100
GCAACATACC	GGAGGCCACA	TACTCTGGGT	GCGGCTCCGG	TCCCTGGATT	2150
ACACCCAGGT	GCATGGTCCA	CTACCCGTTAT	AGGCTTTTGGC	ACTATCCTTG	2200
TACCATCAAT	TACACCATAT	TCAAAGTCAG	GATGTACGTG	GGAGGGGTGG	2250
AGCACAGGCT	GGAGCGGGCC	TGCAACTGGA	CGCGGGGCGA	ACCGTGTGAT	2300
CTGGAAGACA	GGACAGGTC	CGAGCTCAGC	COGTTGCTGC	TGTCCACCAC	2350
ACAGTGGCAG	GTCTTTCGGT	GTCTTTTCAC	GACCCTGCCA	GOCCTGTCCA	2400
CCGGCCTCAT	CCACCTCCAC	CAGAACATTG	TGGACGTGGA	GTACTTGTAT	2450
GGGGTAGGGT	CAAGCATGCG	GTCCCTGGCC	ATTAAGTGGC	AGTACGTCTG	2500
TCTCTGTTC	CTTCTGCTTG	CAGACGGCGG	CGTCTGCTCC	TGCTTGTGGA	2550
TGATGTACT	CATATCCCAA	GCGGAGGCGG	CTTTGAGAA	CCTGTGTAATA	2600
CTCAATGCAG	CATCCCTGGC	CGGACGCAC	GGTCTTGTGT	CCTTCTCTGT	2650
GTCTTCTG	TTTTCGGTGT	ATCTGAAGGG	TAGGTGGGTG	CCCGGAGCGG	2700
TCTAGCCCTC	CTAGCGGATG	TGGCCTCTCC	TCTGCTCTCT	GCTGGCGTTG	2750
CCTCAGCGGG	CATACGCACT	GGACACGGAG	GTGGCGCGGT	CGTGTGGCGG	2800
CGTTGTCTCT	GTGGGGTTAA	TGGCGCTGAC	TCTGTGCGCA	TATTACAAGC	2850
GCTATATCAG	CTGGTGCATG	TGGTGGCTTC	AGTATTTTCT	GACCAGAGTA	2900
GAAGCGCAAC	TGCACGTGTG	GGTTCCCGCC	CTCAACGTCC	GGGGCGGGCG	2950
CGATGCCGTC	ATCTTACTCA	TGTGTGTAGT	ACACCCGACC	CTGGTATTTG	3000
ACATCACCAA	ACTACTCCTG	GOCATCTTCC	GACCCCTTTG	GATCTCTCAA	3050
GCCAGTTTGC	TTAAAGTCCC	CTACTTGGTG	CGCGTTCAAG	GCCTTCTCCG	3100
GATCTGCGCG	CTAGCGCGGA	AGATAGCGCG	AGGTTCATTG	GTGCAAAATG	3150
CCATCATCAA	GTTAGGGGCG	CTTACTGGCA	CCATGTGTGA	TAACCATCTC	3200
ACCCCTCTTC	GAGACTGGGC	GCACAACGGC	CTGGGAGATC	TGGCGGTGGC	3250
TGTGGAACCA	GTGCTCTTCT	CCCGAATGGA	GACCAAGCTC	ATCACGTGGG	3300
GGGCAGATAC	CGCGCGGTGC	GGTGACATCA	TCAACGGCTT	GCCCGTCTCT	3350
CGCCGTAGGG	GCCAGGAGAT	ACTGCTTGGG	OCAGCGGACG	GAATGGTCTC	3400
CAAGGGGTGG	AGGTTGCTGG	CGCCCATCAC	GGCGTACGCC	CAGCAGACGA	3450
GAGGCTCTCT	AGGGTGTATA	ATCACCAAGC	TGACTGGCCG	GGACAAAAC	3500
CAAGTGGAGG	GTGAGGTCCA	GATCGTGTCA	ACTGCTACCC	AAACCTTCTT	3550
GGCAACGTGG	ATCAATGGGG	TATGCTGGAC	TGCTTACCAC	GGGGCGGGAA	3600
CGAGGACCAT	CGCATCACCC	AAGGGTCTCT	TCATCCAGAT	GATATCCAAAT	3650
GTGGACCAAG	ACCTTGTGGG	CTGGCCCGCT	CCTCAAGGTT	CCCGCTCAAT	3700
GACACCTGT	ACCTGCGGCT	CCTCGGACCT	TTACCTGGTC	ACGAGGCACG	3750
CCGATGTCAT	TCCCGTGGCG	CGCGGAGGTG	ATAGCAGGGG	TAGCCTGCTT	3800

FIG. 4B

H77C

10	20	30	40	50	
1234567890	1234567890	1234567890	1234567890	1234567890	
TCCGCCCGGC	CCATTTCCTA	CTTGAAAGGC	TCCTCGCGGG	GTCCGCTGTT	3850
GTGCCCCGCG	GGACACGCG	TGGGCTTATT	CAGGGCCGCG	GTGTGCACCC	3900
GTGAGTGGC	TAAAGCGGTG	GACTTTATCC	CTGTGGAGAA	CCTAGGGACA	3950
ACCATGAGAT	CCCGGTGTT	CACGGACAAC	TCCCTCCAC	CACGAGTGC	4000
CCAGAGCTTC	CAGGTGGGCC	ACCTGCATGC	TCCACCGGC	AGCGGTAGA	4050
GCACCAAGGT	CCCGGCTGG	TACGCGGCC	AGGGCTACAA	GGTGTGGTG	4100
CTCAACCCCT	CTGTGCTCG	AACGCTGGC	TTTGGTGCCT	ACATGTCCAA	4150
GGCCCATGGG	GTGTATCTTA	ATATCAGGAC	CGGGGTGAGA	ACAATTACCA	4200
CTGSCAGGCC	CATCAGTAC	TCCACTACG	GCAAGTTCTT	TGCGACGGC	4250
GGGTGCTCAG	GAGGTGCTTA	TGACATAATA	ATTGTGTAGG	AGTGCCACTC	4300
CACGGATGCC	ACATCCATCT	TGGGCATCGG	CACTGTCTTT	GACCAAGCAG	4350
AGACTGCGGG	GGCGAGACTG	GTGTGCTCG	CCACTGCTAC	CCCTCCGGC	4400
TCCGTCACTG	TGTCCCATCC	TAACATCGAG	GAGGTGTCTC	TGTCCACCAC	4450
CGGAGAGATC	CCCTTTTACG	GCAAGGCTAT	CCCCCTCGAG	GTGATCAAGG	4500
GGGGAAGACA	TCTCATCTTC	TGCCACTCAA	AGAAGAAGTG	CGACGAGCTC	4550
CGCGCGAAGC	TGGTCCGATT	GGGCATCAAT	CGCGTGGCCT	ACTACCGCGG	4600
TCTTGACGTG	TCTGTCACTC	GCACAGCGG	CGATGTGTGC	GTGCTGTCCA	4650
CCGATGCTCT	CATGACTGGC	TTTACCGCGG	ACTTGCAGTC	TGTGATAGAC	4700
TGCAACACGT	GTGTCACTCA	GACAGTCGAT	TTCAGCCTTG	ACCTTACCTT	4750
TACCATTTAG	ACAACCAAGC	TCCCCAGGA	TGCTGTCTCC	AGGACTCAAC	4800
GCCGGGCGAG	GACTGGCAGG	GGGAAGCCAG	GCATCTATAG	ATTTGTGGCA	4850
CCGGGGGAGC	GCCTCTCGG	CATGTTTCGAC	TGTCGCTGTC	TCTGTGAGTG	4900
CTATGACGCG	GGCTGTGCTT	GGTATGAGCT	CACGCCCGCC	GAGACTACAG	4950
TTAGGCTACG	AGCGTACATG	AACACCCCGG	GGCTTCCCGT	GTGCCAGGAC	5000
CATCTTGAAT	TTTGGGAGGG	CGTCTTTACG	GGCTCAGCTC	ATATAGATGC	5050
CCACTTTTITA	TCCAGACAA	AGCAGAGTGG	GGAGAACCTT	CCTTACCTGG	5100
TAGCGTACCA	AGCCACCGTG	TGCGCTAGGG	CTCAAGCCCC	TCCCCCATCG	5150
TGGGACACGA	TGTGGAAGTG	TTTGATCCGC	CTTAAACCCA	CCCTCATGCG	5200
GCCAACACCC	CTGCTATACA	GACTGGGCGC	TGTTTCAAGAT	GAAGTCAACC	5250
TGACGCACCC	AATCACCAA	TACATCATGA	CATGCATGTG	GGCGACCTTG	5300
GAGGTGTGTA	CGAGCACCTG	GGTGCTCGTT	GGCGGCGTCC	TGGCTGCTCT	5350
GGCCGCGTAT	TGCCGTGCAA	CAGGCTGGGT	GGTCATAGTG	GGCAGGATCG	5400
TCTTGTGCGG	GAGGCCGGCA	ATTATACCTG	ACAGGGAGGT	TCTCTACACG	5450
GAGTTTCAGT	AGATGGAAGA	GTGCTCTCAG	CACTTTACGG	ACATCGAGCA	5500
AGGGATGATG	CTCGCTGAGC	AGTTCAGCA	GAAGGCCCTC	GGCTCTCTGC	5550
AGACCGCGTC	CCGCCATGCA	GAGGTTATCA	CCCCTGTCTG	CCAGACCAAC	5600
TGGCAGAAAC	TGAGGCTCTT	TTGGGCGAAG	CACATGTGGA	ATTTTATCAG	5650
TGGGATACAA	TACTTGGCGG	GCTGTGCAAC	GCTGCCCTGGT	AACCCCGCCA	5700

FIG. 4C

H77C

10	20	30	40	50	
1234567890	1234567890	1234567890	1234567890	1234567890	
TTGCTTCAIT	GAITGCTTTT	ACAGCTGCG	TCACCAAGCC	ACTAACCACT	5750
GGCCAAACCC	TCCTCTTCAA	CATATTGGGG	GGGTGGGTGG	CTGCCCAGCT	5800
CGCCGCCCCC	GGTGCCGCTA	CTGCCCTTGT	GGGTGCTGGC	CTAGCTGGCG	5850
CGGOCATCG	CAGGTTTGA	CTGGGGAAGG	TCCTGTGTGA	CAITCTTTGA	5900
GGGTATGGCG	CGGGCGTGGC	GGGAGCTCTT	GTAGCATTCA	AGATCATGAG	5950
CGGTAGGGTC	CCCTCCACGG	AGGACCTGGT	CAATCTGCTG	CCCGCATCC	6000
TCTCGOCTGG	AGCCCTTGTA	GTGGGTGTGG	TCTGGGCAGC	AATACTGGGC	6050
CGGCAAGTTG	GCCCGGGCGA	GGGGGCAGTG	CAATGGATGA	ACCGGCTAAT	6100
AGCCCTTCGC	TCGCCGGGGA	ACCATGTTTC	CCCAAGCCAC	TACGTGCGCG	6150
AGAGCGATCG	AGCCGCCCGC	GTCAGTGCCA	TACTCAGCAG	CCTCACTGTA	6200
ACCCAGCTCC	TGAGGCGACT	GCATCAGTGG	ATAAGCTCGG	AGTGTACAC	6250
TCCATGCTCC	GGTTCTTGGC	TAAGGGACAT	CTGGGACTGG	ATATGCGAGG	6300
TGCTGAGCGA	CTTTAAGACC	TGGCTGAAAG	CCAAGCTCAT	GCCACAACCTG	6350
CCTGGGATTC	CCTTTGTGTC	CTGCCAGCGC	GGGTATAGGG	GGGTCTGGCG	6400
AGGAGACGGC	ATTATGCACA	CTCGCTGCCA	CTGTGGAGCT	GAGATCACTG	6900
GACATGTCAA	AAACGGGACG	ATGAGGATCG	TCGGTCCCTAG	GACCTGCAGG	6950
AACATGTGGA	GTGGGACGTT	CCCCATTAA	GCCTACACCA	CGGGCCCCCTG	6550
TACTCCCTTT	CCTGCGCGCA	ACTATTAAGTT	CGCGCTGTGG	AGGGTGTCTG	6600
CAGAGGAATA	CGTGGAGATA	AGGCGGGTGG	GGGACTTCCA	CTAGCTATCG	6650
GGTATGACTA	CTGACAACTC	TAAATGCCCG	TGCCAGATTC	CATCGCCCGA	6700
ATTTTTCACA	GAATTGGACG	GGGTGCGGCT	ACACAGGTTT	GCGCCCCCTT	6750
GCAAGCCCTT	GCTGCGGGAG	GAGGTATCAT	TCAGAGTAGG	ACTCCACGAG	6800
TACCCGGTGG	GGTGCATATT	ACCTTTCGGAG	CCCGAACCAG	ACGTAGCCGT	6850
GTGTAGCTCC	ATGCTCACTG	ATCCCTCCCA	TATAACAGCA	GAGGCGGCGG	6900
GGAGAAGGTT	GGCGAGAGGG	TCACCCCTTT	CTATGCCCCAG	CTCCTCGGCT	6950
AGCCAGCTGT	CCGCTCCATC	TCTCAAGGCA	ACTTGCAACG	CCAACCATGA	7000
CTCCCTGAC	GCCGAGCTCA	TAGAGGCTAA	CCTCCTGTGG	AGGCAGGAGA	7050
TGGCGGGCAA	CATCACCAGG	GTGTAGTTCAG	AGAACAAGAT	GGTGAITCTG	7100
GACTCCTTTC	ATCCGCTTGT	GGCAGAGGAG	GATGAGCGGG	AGGTCTCCGT	7150
ACCTGCAGAA	ATTCTGCGGA	AGTCTCGGAG	ATTGCCCCGG	GCCCTGCCCG	7200
TCTGGGCGCG	GCCGACTTAC	AACCCCCGCG	TAGTAGAGAC	GTGGA AAAAG	7250
CCTGACTACG	AACCACTTGT	GGTCCATGGC	TGCCCGCTAC	CACTCCACG	7300
GTCCCTCCT	GTGCTCCGCG	CTCGGAAAAA	GCGTACGGTG	GTCCTCACCG	7350
AATCAACCCCT	ATCTACTGCC	TTGGCCGAGC	TTGCCACCAA	AGTTTGTGGC	7400
AGCTCCTCAA	CTTCCGGCAT	TACGGGCGAC	AATACGACAA	CATCCTCTGA	7450
GCCCCGCCCT	TCTGGCTGCC	CCCCGACTC	CGAGCTGTAG	TCTATTCTTT	7500
CCATGCCCCC	CCTGGAGGGG	GAGCCTGGGG	ATCCGGATCT	CAGGACGGG	7550
TCATGGTCCA	CGTTCAGTAG	TGGGCGCGAC	ACCGAAGATG	TCTGTGCTGT	7600

FIG. 4D

H77C

10	20	30	40	50	
1234567890	1234567890	1234567890	1234567890	1234567890	
CTCAATGTCT	TATTCTCTGGA	CAGGCGCACT	CGTCAACCCG	TGCGCTGCGG	7650
AAGAACAAAA	ACTGCCCATC	AACGCACTGA	GCAACTCGTT	GCTACGCCAT	7700
CACAATCTGG	TGTATTTCAC	CACATCACGC	AGTGGCTTGC	AAAGGCAGAA	7750
GAAAGTCACA	TTTGACAGAC	TGCAAGTTCT	GGACAGCCAT	TACCAGGACG	7800
TGCTCAAGGA	GGTCAAGACA	GCGGGTCAA	AAGTGAAGGC	TAACTTGCTA	7850
TCGGTAGAGG	AAGCTTGCAG	CCTGACGCC	CCACATTTCAG	CCAAATCCAA	7900
GTTTGGCTAT	GGGGCAAAAG	ACGTCCGTTC	CCATCCAGAA	AAGGCGGTAG	7950
CCCACATCAA	CTCCGTGTGG	AAAGACCTTC	TGGAAGACAG	TGTAACACCA	8000
ATAGACACTA	CCATCATGGC	CAAGAACGAG	GTTCCTCTGG	TTCAGCCTGA	8050
GAGGGGGGGT	CGTAAGCCAG	CTCGTCTCAT	CGTGTTCGCC	GACCTGGGCG	8100
TGCGCGTGTG	CGAGAAGATG	GCCCTGTACG	ACGTGGTTAG	CAAGCTCCCC	8150
CTGGCCGTGA	TGGGAAGCTC	CTACGGATTG	CAATACTCAC	CAGGACAGCG	8200
GGTTGAATTC	CTCGTGCAAG	CGTGGAAATC	CAAGAAGACC	CCGATGGGGT	8250
TCTCGTATGA	TACCCGCTGT	TTTGTACTCA	CAGTCACTGA	GAGCGACATC	8300
CGTACGGAGG	AGGCAATTTA	CCAATGTTGT	GACCTGGACC	CCCAAGCCCG	8350
CGTGGCCATC	AAGTCCCTCA	CTGAGAGGCT	TTATGTTGGG	GGCCCTCTTA	8400
CCAATTCAAG	GGGGGAAAAC	TGCGGCTACC	GCAGGTGCCG	CGCGAGCGGC	8450
GTACTGACAA	CTAGCTGTGG	TAACACCCTC	ACTTGTCTACA	TCAAGGCCCG	8500
GGCAGCCTGT	CGAGCCGACG	GGCTCCAGGA	CTGCACCATG	CTCGTGTGTG	8550
GCGACGACTT	AGTCGTTATC	TGTGAAGATG	CGGGGGTCCA	GGAGGACCGG	8600
GCGAGCCTGA	GAGCCTTCAC	GGAGGCTATG	ACCAGGTATG	CCGCCCCGCC	8650
GCGGGACCCC	CCACAACCCG	AATACGACTT	GGAGCTTATA	ACATCATGCT	8700
CCTCCAAAGT	GTCAAGTGGC	CAAGACGGCG	CTGGAAAGAG	GGTCTACTAC	8750
CTTACCCGTG	ACCTTACAA	CCCCCTCGCG	AGAGCCCGGT	GGGAGACAGC	8800
AAGACACACT	CCAGTCAATT	CCTGGCTAGG	CAACATAATC	ATGTTTGCCC	8850
CCACACTGTG	GCGCAGGATG	ATACTGATGA	CCCATTTCTT	TAGCGTCCTC	8900
ATAGCCAGGG	ATCAGCTTGA	ACAGGCTCTT	AACGTGTAGA	TCTACGGAGC	8950
CTGCTACTCC	ATAGAACCAC	TGGATCTACC	TCCAATCAAT	CAAGACTTCC	9000
ATGGGCTCAG	CGCATTTTCA	CTCCACAGTT	ACTCTCCAGG	TGAAATCAAT	9050
AGGGTGGCCG	CATGCCCTAC	AAAACCTTGG	GTCCCGCCCT	TGCGAGCTTG	9100
GAGACACCCG	GCCCGGAGCG	TCGCGGCTAG	GCTTCTGTGC	AGAGGAGGCA	9150
GGGCTGCCAT	ATGTGGCAAG	TACCTCTTCA	ACTGGGCAGT	AAGAACAAAG	9200
CTCAAACTCA	CTCCAATAGC	GGCGGCTGGC	CGGCTGGACT	TGTCGGGTTG	9250
GTTCAACGCT	GGCTACAGCG	GGGGAGACAT	TTATCACAGC	GTGTCTCATG	9300
CCCGGCCCCG	CTGGTTCTGG	TTTGTGCTAC	TGCTCTGCTG	TGCAAGGGTA	9350
GGCATCTACC	TGCTCCCCAA	CCGATGAAGG	TTGGGGTAAA	CACCTCCGCC	9400
TCTTAAGCCA	TTTCTGTGTT	TTTTTTTTTT	TTTTTTTTTT	TTTTTCTTTT	9450
TTTTTTTCTT	TCTTTTCTTT	CTTTTTTTTC	TTTCTTTTTC	CCTTCTTTAA	9500

FIG. 4E

H77C

10	20	30	40	50	
1234567890	1234567890	1234567890	1234567890	1234567890	
TGGTGGCTCC	ATCTTAGCCC	TAGTCACGGC	TAGCTGTGAA	AGGTCCGTGA	9550
GCCGCATGAC	TGCAGAGAGT	GCTGATACTG	GCCCTCTCTC	AGATCATGT	9599

FIG. 4F

H77C

10	20	30	40	50	
1234567890	1234567890	1234567890	1234567890	1234567890	
MSINPKPQRK	TKRNINRRPQ	DVKFPGGGQI	VGGVYLLPFR	GPRLGVRAIR	50
KTSERSQPRG	RRQPIPKARR	PEGRIWAQFG	YFWPLYGNBG	CGWAGWLLSP	100
RGSRPSWGPT	DPRRRSRNLG	KVIDILTQGF	ADLMGYIPLV	GAPLGGAARA	150
LAHGVVLED	GVNYATGNLP	GCSFSIFLLA	LLSCLIVPAS	AYQVRNSSGL	200
YHVINDCPNS	SIVYEADAI	LHTPGCVPCV	REGNASRCWV	AVTPTVAIRD	250
GKLPITQLRR	HIDLLVGSAT	LCSALYVGLD	CGSVFLVQQL	FTFSPRRHWT	300
TQDCNCSTYP	GHITGHRMAW	IMMINWSPTA	ALVVAQLLRI	PQAIMIMTAG	350
AHAGVLAGIA	YFSMVGNWAK	VLVVLLEFAG	VDAETHVTGG	NAGRITTAGLV	400
GLLTPGAKQN	IQLININGSW	HINSTALNQN	ESLNTGALAG	LFYQHKFNSS	450
GCPERLASCR	RLIDFAQQWG	PISYANGSGL	DERPYCWHYP	PRPCGIVPAK	500
SVCGPVCYCT	PSPVVVGTID	RSGAPTYSWG	ANDIDVFVLN	NIRPPLGNWF	550
GCTMNSITGF	TKVCGAPPCV	IGGVGNNTLL	CPITDCFRKHP	EATYSRCGGG	600
FWITPRCMTD	YPYRLWHYFC	TINYTIFKVR	MYVGGVEHRL	EACNWIRGE	650
RCLEDRDRS	ELSPILLSTT	QWQVLPESFT	TLPALSTGLI	HLHQINIVDQ	700
YLYGVGSSIA	SWAIKWEYVW	LLFLLLADAR	VCSCLMMLL	ISQAEAALEN	750
LVILNAASLA	GTHGLVSFLV	FFCFAWYLLG	RWPGAVYAL	YGMWPLLLLL	800
LALPQRAYAL	DTEVAASCGG	VVLVGLMALT	LSPYYKRYIS	WCMWWLQYFL	850
TRVEAQLHWV	VPPLNVRGGR	DAVILLMCVW	HTPLVFDITK	LLLAIFGPLW	900
ILQASLLKVP	YFVRVQGLLR	ICALARKTAG	GHYVQMAITK	LGALTGTYYV	950
NHILTPLRDVA	HNGLRDLAVA	VEPVVFSRME	TKLITWGADT	AACGDIINGL	1000
PVSARRQGEI	LLGPADGMVS	KGWRLLAPIT	AYAQQITRGLL	GCIITISLTGR	1050
DKNQVEGEVQ	IVSTATQITFL	ATCINGVCWT	VYHGAGITRTI	ASPKGPIVTQM	1100
YINVDQDLVG	WEPAQGSRSLL	TPCTCGSSDL	YLVIRHADVI	PVRRRGDSRG	1150
SLLSPRPISY	LKGSSGGPLL	CPAGHAVGLF	RAAVCTRGA	KAVDFIPVEN	1200
LGTIMRSPVF	TINSSPPAVP	QSFQVAHLHA	PTGSGKSTKV	PAAYAAGQYK	1250
VLVLNPSVAA	TLGFGAYMSK	AHGVDENIRT	GVRTITITGSP	ITYSTYKFKL	1300
ADGGCSGGAY	DIITCDECHS	TDATSTILGIG	TVLDQAETAG	ARLVVLATAT	1350
PPGSVTVSHV	NIEEVALSTT	GEIPFYKGAI	PLEVITKGGRH	LIFCHSKKKC	1400
DELAACKLVAL	GINAVAYYRG	LDSVPTSG	DVVVSTDAL	MIGFTGDFDS	1450
VIDCNICVTQ	TVDFSLDPTF	TIETITLPOD	AVSRIQRRGR	TGRGKPGIYR	1500
FVAPGERPSG	MFDSSVLCBC	YDAGCAWYEL	TPAETTVRLR	AYMNTFGLPV	1550
QQDHLEFWEG	VFTGLTHIDA	HFLSQIKQSG	ENFPYLVAYQ	ATVCARAQAP	1600
PPSNDQMWKC	LIRLKPTILHG	PTPLLYRLGA	VQNEVITLHP	ITKYIMTCMS	1650
ADLEVVTSTW	VLVGGVLAAL	AAVCLSTGCV	VTVGRIVLSG	KPAIIPDREV	1700
LYQEDEFEMEE	CSQHLPYIEQ	GMMLABQFKQ	KALGLLQIAS	RHAEVITPAV	1750
QTNWQKLEVF	WAKHMMNFIS	GIQYLAGLST	LEGNPAIASL	MAFTAAVTSP	1800
LTTGQTLLFN	ILGGWAAQL	AAPGAATAFV	GAGLAGAAIG	SVGLGKVLVD	1850
ILAGYGAGVA	GALVAFKIMS	GEVPSTEDLV	NLLPAILSPG	ALVVGWCAAC	1900

FIG. 4G

H77C

10	20	30	40	50	
1234567890	1234567890	1234567890	1234567890	1234567890	
ILRRHVGPGE	GAVQAMNRLI	AFASRGNHVS	PIHYVPESDA	AARVTAILSS	1950
LITVTQLLRL	HQWISSECTT	PCSGSWLRDI	WDWICEVLSD	FKIWLKAKIM	2000
PQLGPIFVVS	CQGRYRGVWR	GDGIMHTRCH	CGAETTGHVK	NGIMRIVGPR	2050
TCRNWWSGTF	PINAYTTGPC	TPLPAPNYKF	ALNRVSAEY	VEIRRVGDFH	2100
YVSGMITDNL	KCPQIPISPE	FFTELDGVRL	HRFAPPCKPL	LREEVSFRVG	2150
LHEYFVGSQ	PCEPEPDVAV	LITSMITDP	TTAEAAGRRL	ARGSPPSMAS	2200
SSASQLSAPS	LKATCTANHD	SPDAELTEAN	LLWRQEMGGN	ITRVESENKV	2250
VILDSFDPLV	AEEDEREVSV	PAETLRKSRR	FARALPWWAR	PDYNPPLVET	2300
WKKPDVEPPV	VHGCPLPPPR	SPPVPPPRKK	RIVVLTESTL	STALAEALTK	2350
SFGSSSTSGI	TGINTTTSSE	PAPSGCPPDS	DVESYSSMPP	LEGEFGDPDL	2400
SDGSWSIVSS	GADTEDVVOC	SMSYSWTGAL	VTPCAAEEQK	LIPINALSNSL	2450
LRHHNLVYST	TSRSACQROK	KVITFRLQVL	DSHYQDVLKE	VKAAASKVKA	2500
NLLSVEEACS	LITPPHSAKSK	FGYGAKDVRC	HARKAVAHIN	SWWKDILLED	2550
VITPIDITIMA	KNEVFCVQPE	KGGRKPARLI	VFPDLGVVRC	EKMALYDWS	2600
KLPLAVMGSS	YGFQYSPGQR	VEFLVQAWKS	KKTRMGFSYD	TRCFDSTVTE	2650
SDIRTEEATY	QCCDLDPQAR	VAIKSLTERL	YVGGPLINSR	GENCGYRRCR	2700
ASGVLITSCG	NILTCYIKAR	AACRAAGLQD	CTMLVCGDDL	VVICESAGVQ	2750
EDAASLRAFT	EAMTRYSAAP	GDPPQPEYDL	ELITSCSSNV	SVAHDGAGKR	2800
VYVLTDRPTT	PLARAAWETA	RHTFVNSWL	NIIMFAPTLW	ARMILMIHEF	2850
SVLIARDQLE	QALNCEITYGA	CYSIEPLDLP	PIIQRLHGLS	AFSLHSYSEG	2900
EINRVAACLR	KLGVFPPLRAW	RHRARSVRAR	LLSRGGRAAI	CGKYLFWNAV	2950
RIKLKLTPIA	AAGRLDLGWS	FTAGYSGGDI	YHSVSHARPR	WFWFCLLLLA	3000
AGVGIYLLPN	R				3011

FIG. 4H

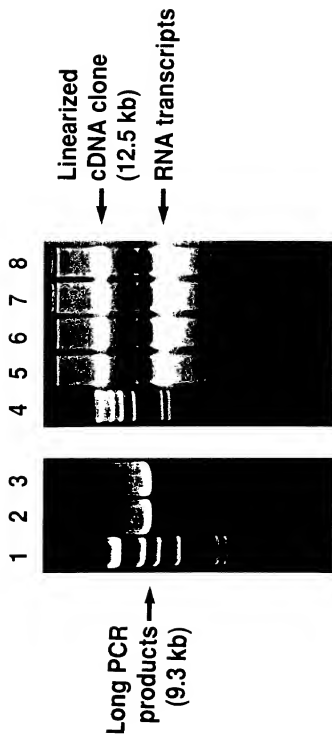


FIG. 5

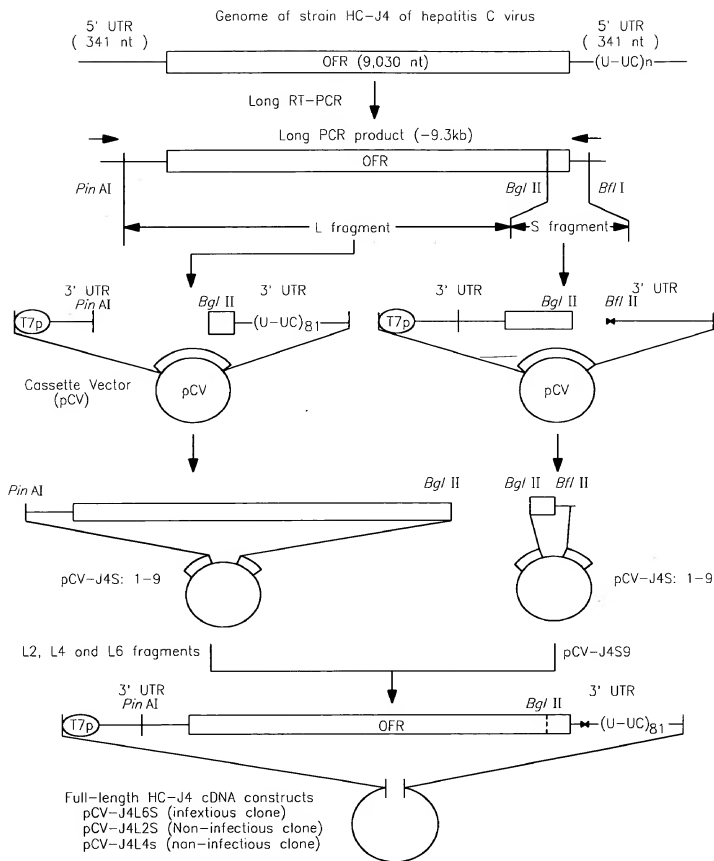


FIG. 6

	L fragment	Cons-p9	L1* (A)	L2 (A)	L6 (A)	L8 (A)	L9 (A)	L3 (B)	L7* (B)	L10 (B)	L4 (C)	Cons-D	Cons-F
Core	16	N	S	.	.	.	.	.	.	.	.	.	N
	36	L	.	.	.	P	.	.	.	.	.	.	L
	52	A	.	.	.	.	.	T	T	T	T	T	AT
	70	R	.	.	.	.	.	Q	Q	Q	.	RQ	RQ
	189	A	.	.	.	.	.	.	T	.	.	.	A
E1	195	R	.	.	.	.	.	H	.	H	.	.	R
	231	R	.	Q	Q	Q	.	.	.	.	.	.	R
	233	C	.	.	.	.	.	A	A	A	.	.	G
	234	N	.	.	.	.	.	D	D	D	.	.	N
	250	N	.	.	.	.	.	.	.	.	.	.	N
	299	E	A	.	.	.	A	.	.	.	.	.	E
	304	C	.	.	.	.	.	.	.	.	.	.	C
	379	A	.	.	.	.	.	T	.	T	.	.	A

FIG. 7A

	L fragment	Cons-p9	L1*(A)	L2(A)	L6(A)	L8(A)	L9(A)	L3(B)	L7*(B)	L10(B)	L4(C)	Cons-D	Cons-F
E2	384	F	.	.	.	.	.	T	T	T	.	ET	A
	386	H	.	.	.	.	.	V	V	V	.	HY	HY
	388	T	.	.	.	.	.	S	S	S	.	TS	TS
	390	R	.	.	.	.	.	G	G	G	.	G	RG
	391	V	.	.	.	.	.	.	.	A	.	.	V
	392	A	V	.	.	V	V	.	.	.	V	V	AV
	394	H	.	.	.	.	.	R	R	R	R	.	H
	405	S	.	.	.	.	.	.	P	.	.	.	S
	434	Q	.	.	.	.	.	H	H	H	.	H	QH
	438	F	.	.	.	.	.	L	L	L	L	L	FL
	444	A	.	.	.	.	.	T	T	T	T	T	AT
	450	S	.	.	.	.	.	.	.	.	P	.	S
	458	S	.	.	.	N	.	.	.	.	.	.	S
	466	A	.	.	.	.	.	V	V	V	.	AV	AV
	474	Y	.	.	.	.	.	H	.	.	.	.	Y
	476	K	.	.	.	.	.	E	E	E	E	E	KE
	496	V	.	.	.	.	.	I	I	I	I	I	VI
	524	V	.	.	.	.	A	.	A	.	.	.	V
	536	V	.	M	.	.	.	.	.	.	.	.	V
	580	I	.	.	.	.	.	.	V	.	.	.	I
	622	L	V	.	.	.	V	.	.	.	.	.	L
	673	Q	.	.	.	P	.	.	.	.	.	.	Q
	783	A	.	.	.	.	.	.	V	.	.	.	A
p7													

FIG. 7B

	L fragment	Cons-p9	L1* (A)	L2 (A)	L6 (A)	L8 (A)	L9 (A)	L3 (B)	L7* (B)	L10 (B)	L4 (C)	Cons-D	Cons-F
NS2	820	G	.	.	.	.	.	.	S	.	.	.	G
	857	M	.	.	.	.	.	I	.	.	.	.	M
	927	K	.	.	.	.	.	.	R	.	.	.	K
	934	V	I	I	.	I	I	.	.	.	.	.	V
	937	A	.	.	V	.	.	.	.	.	.	.	A
	978	A	.	.	.	.	.	D	D	D	.	D	A.D
	1028	P	.	.	.	S	.	.	.	.	.	.	P
NS3	1031	A	.	.	.	.	.	.	T	.	.	.	A
	1043	V	.	.	I	.	I	I	I	.	I	.	V1
	1067	Q	.	.	.	.	H	H	H	.	.	H.Q	Q.H
	1097	I	X	.	.	.	.	.	.	.	.	.	I
	1188	G	R	.	.	.	.	.	.	.	.	.	G
	1215	S	.	.	T	.	.	.	.	.	.	.	S
	1223	F	.	S	.	.	.	.	.	.	.	.	F
	1226	A	.	.	.	.	.	.	.	V	.	.	A
	1339	A	V	.	.	.	.	.	.	.	.	.	A
	1399	K	N	.	.	.	.	.	.	.	.	.	K
	1503	T	.	.	.	.	.	S	.	S	.	.	T
	1528	Y	.	.	.	.	.	.	.	.	.	.	Y
NS4A	1535	T	A	.	.	.	.	.	.	.	.	.	T
	1662	L	.	P	.	.	.	.	.	.	.	.	L

FIG. 7C

	L fragment	Cons-p9	L1*(A)	L2(A)	L6(A)	L8(A)	L9(A)	L3(B)	L7*(B)	L10(B)	L4(C)	Cons-D	Cons-F
NS4B	1753	K	•	P	•	•	•	•	•	•	•	•	K
	1805	H	•	•	N	•	•	N	•	N	N	N	HN
	1949	S	•	•	•	•	•	•	•	•	P	•	S
	2105	M	•	•	•	•	V	I	•	I	•	•	M
NS5A	2136	K	•	•	•	•	•	•	•	•	R	•	K
	2146	T	•	•	•	•	•	A	A	A	•	TA	TA
	2226	L	•	•	•	•	•	P	•	•	•	•	L
	2259	L	•	•	•	•	•	F	•	•	•	•	L
	2262	E	•	•	•	•	•	D	D	D	•	ED	ED
	2334	V	•	•	•	•	•	J	•	•	•	•	V
	2371	L	•	•	•	•	•	Q	Q	Q	•	LQ	LQ
	2385	Y	•	•	•	•	•	•	•	•	H	•	Y
	2692	N	•	•	•	•	•	•	S	•	•	•	N
	2757	A	•	•	•	•	•	•	•	•	•	•	A
NS5B	2785	C	•	R	•	•	•	•	•	•	•	•	C
	2824	I	•	V	•	•	•	•	•	•	•	•	I
	2861	A	•	•	•	•	•	V	•	•	•	•	A
	S fragment		S5	S9	S2	S3	S7	S8	S10	S4	S6		
	2968	G	•	•	•	•	•	S	S	•	•	•	G
	2975	S	•	•	•	•	•	G	G	G	G	•	S
	2978	D	•	•	•	•	•	•	•	•	G	•	D
	2999	S	•	F	F	F	•	•	•	•	•	•	S

FIG. 7D

nt	L1 (A)	L2 (A)	L6 (A)	L8 (A)	L9 (A)	L3 (B)	L7 (B)	L10 (B)	L4 (C)	HC-14/91	HC-14/83
L1 (A)		0.56	0.60	0.36	0.33	1.50	1.53	1.46	0.95	0.83	1.79
L2 (A)	0.59		0.55	0.35	0.50	1.49	1.51	1.45	0.98	0.82	1.77
L6 (A)	0.52	0.42		0.31	0.55	1.33	1.38	1.29	0.80	0.68	1.58
L8 (A)	0.42	0.38	0.31		0.31	1.32	1.34	1.28	0.79	0.65	1.62
L9 (A)	0.35	0.52	0.45	0.35		1.42	1.42	1.38	0.91	0.75	1.66
L3 (B)	1.47	1.43	1.15	1.33	1.36		0.61	0.30	1.43	0.90	1.51
L7 (B)	1.36	1.33	1.05	1.22	1.22	0.66		0.57	1.47	0.95	1.54
L10 (B)	1.36	1.33	0.59	1.22	1.26	0.31	0.56		1.37	0.85	1.42
L4 (C)	0.77	0.80	0.59	0.63	1.26	1.12	1.08	1.01		0.76	1.73
HC-14/91	0.94	0.91	0.63	0.80	0.87	0.77	0.73	0.66	0.52		1.22
HC-14/83	1.96	1.89	1.68	1.85	1.82	1.75	1.61	1.61	1.71	1.40	

FIG. 8

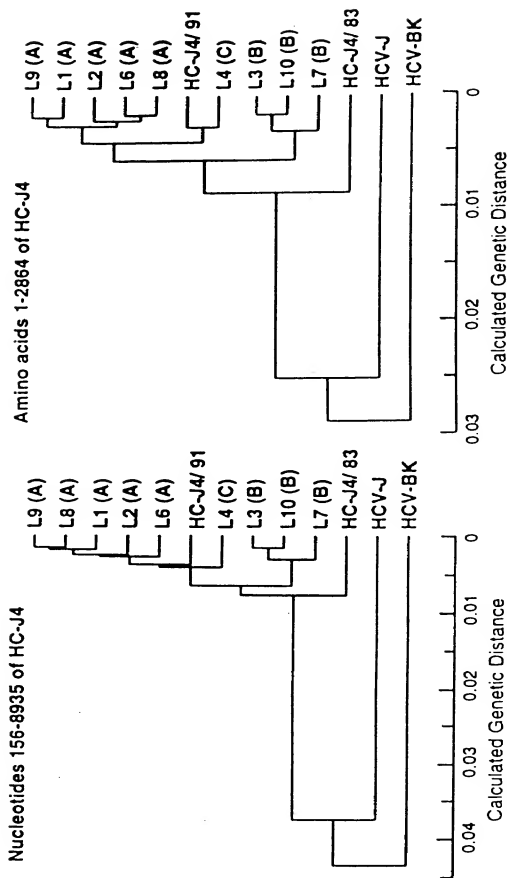


FIG. 9

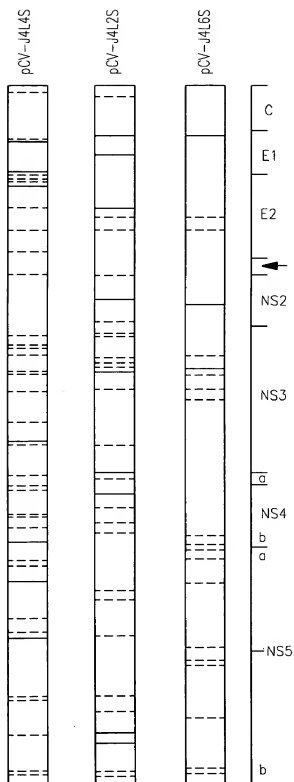


FIG. 12

Downloaded from www.jstor.org

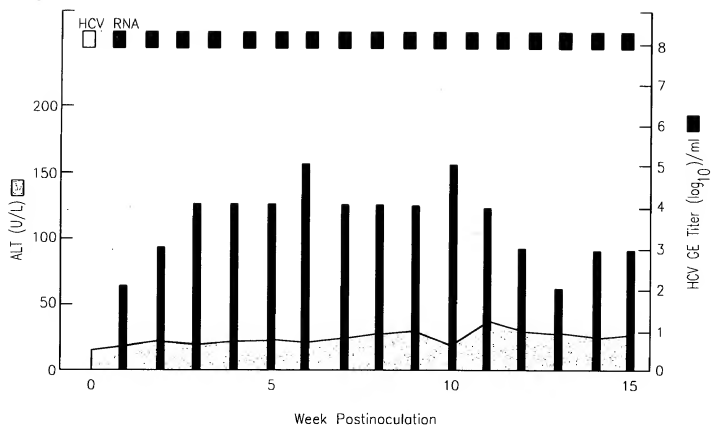


FIG. 13

HC-J4

10	20	30	40	50	
1234567890	1234567890	1234567890	1234567890	1234567890	
GCCAGCCCC	TGATGGGGGC	GACACTCCAC	CATGAATCAC	TCCCTGTGA	50
GGAACTACTG	TCTTCAACGA	GAAAGCGTCT	AGCCATGGCG	TTAGTATGAG	100
TGTCGTGCAG	CCTCCAGGAC	CCCCCTCC	GGGAGAGCCA	TAGTGGTCTG	150
CGGAACCGGT	GAGTACACCG	GAATTGCCAG	GACGACCGGG	TCTTTTCTTG	200
GATCAACCCG	CTCAATGCGT	GGAGATTGG	GCGTGCCCC	GCGAGACTGC	250
TAGCCGAGTA	GTGTTGGGTC	GCGAAAGGCC	TTGTGGTACT	GCTTGATAGG	300
GTGCTTGCGA	GTGCCCCGGG	AGGTCTCGTA	GACCGTGCAC	CATGAGCACG	350
AATCCCTAAAC	CTCAAAGAAA	AACCAAACGT	AACACCAACC	GCGCCCCACA	400
GGACGTCAAG	TTCOCGCGG	GTGGTCAGAT	CGTTGGTGA	GTTTACCTGT	450
TGCCCGCGCAG	GCGCCCCAGG	TTGGGTGTGC	GCGCGACTAG	GAAGGCTTCC	500
GAGCGGTCC	AACCTCGTGG	AAGGCGACAA	CCTATCCCAA	AGGCTCGCCG	550
ACCCCAGGGC	AGGGCCTGGG	CTCAGCCCGG	GTACCCCTGG	CCCTCTATG	600
GCAATGAGGG	CCTGGGGTGG	GCAGGATGGC	TCTGTTCACC	CCGCGGCTCC	650
CGCCCTAGTT	GCGCCCCAC	GGACCCCGG	CGTAGGTCC	GTAACTTGGG	700
TAAGGTCATC	GATACCCCTA	CATGCGGCTT	CGCCGATCTC	ATGGGGTACA	750
TTCCGCTCGT	CGCGCCCC	CTAGGGGGCG	CTGCGAGGC	CTTGGCACAC	800
GGTGTCCGGG	TTCTGGAGCA	CGCGGTGAAC	TATGCAACAG	GAACCTTGGC	850
CGGTTCCTCT	TTCTCTATCT	TCTCTTTGGC	TCTGCTGTCC	TGTTTGACCA	900
TCCAGCTTC	CGCTTATGAA	GTGCGCAACG	TGTCCGGGAT	ATACCATGTC	950
ACGAACGACT	GCTCCAACCT	AAGCAATTGTG	TATGAGGCAG	CGGACGTGAT	1000
CATGCATACT	CCCGGGTGGC	TGCCCTGTGT	TCAGGAGGGT	AACAGCTCCC	1050
GTTGCTGGGT	AGCGCTCACT	CCCAAGCTCG	CGGCCAGGAA	TGCCAGCGTC	1100
CCCACTACGA	CAATACGAGC	CCAAGTGCAC	TTGCTCGTTG	GGACGGCTGC	1150
TTTCTGCTCC	GCTATGTATG	TGGGGGATCT	CTGCGGATCT	ATTTTCTCTG	1200
TCTCCAGCT	GTTCACCTTC	TGCGCTGCGC	GGCATGAGAC	AGTGACGAGC	1250
TGCAACTGCT	CAATCTATCC	CGGCCATGTA	TCAGGTACCC	GCAATGGCTTG	1300
GGATATGATG	ATGAAGTGGT	CACCTACAAC	AGCCCTAGTG	GTGTCCGAGT	1350
TGCTCCGGAT	CCCAACAAGT	GTGTTGGACA	TGGTGGCGGG	GGCCCACTGG	1400
GGAGTCCCTG	CGGGCCCTTG	CTACTATTTCC	ATGGTAAAGCA	ACTGGGCTAA	1450
GGTTCTGAIT	GTGGCGCTAC	TCTTTTGCCG	CGTTGACCGG	GACACCCACA	1500
CGACGGGGAG	GGTGGCCGGC	CACACCACCT	CCGGGTTTAC	GTCCCTTTTC	1550
TCATCTGGGG	CGTCTCAGAA	AATCCAGCTT	GTGAATACCA	ACGGCAGCTG	1600
GCACATCAAC	AGGACTGCCC	TAAATTGCAA	TGACTCCCTC	CAAACCTGGT	1650
TCTTTGCCCG	CGTGTTTTAC	GCACACAAGT	TCAACTCTGC	CGGGTGGCCG	1700
GAGCGCATGG	CCAGCTGCGG	CCCCATTGAC	TGGTTGCGCC	AGGGGTGGGG	1750
CCCCATCACC	TATACTAAGC	CTAACAGCTC	GGATCAGAGG	CCTTATTTGCT	1800
GGCATTTACG	GCCTCGACCG	TGTGGTGTGC	TACCCCGGTC	GCAGGTGTGT	1850
GGTCCAGTGT	ATTGTTTTCAC	CCCAAGCCCT	GTTGTGGTGG	GGACCAACGA	1900

FIG. 14A

HC-J4

10	20	30	40	50	
1234567890	1234567890	1234567890	1234567890	1234567890	
TCGTTCGGGT	GTCCCTACGT	ATAGCTGGGG	GGAGAATGAG	ACAGACGTGA	1950
TGCTCTCAA	CAACACGGT	COGOCACAAG	GCAACTGGTT	CGGCTGTACA	2000
TGGATGAATA	GTACTGGGTT	CACTAAGACG	TGCGGAGGTC	COCCGTGTAA	2050
CATCGGGGGG	GTGGGTAAAC	GCACCTTGAT	CTGCCCCACG	GACTGCTTCC	2100
GGAAGCACCC	CGAGGCTACT	TACACAAAAT	GTGGCTCGGG	GOOCTGGTTG	2150
ACACCTAGGT	GOCTAGTAGA	CTACCCATAC	AGGCTTTTGC	ACTACCCCTG	2200
CACCTCAAT	TTTTCCATCT	TTAAGGTTAG	GATGTATGTG	GGGGGGGTGG	2250
AGCACAGGCT	CAATGCCGCA	TGCAATTGGA	CTCGAGGAGA	GCGCTGTAAAC	2300
TTGGAGGACA	GGGATAGGTC	AGAACTCAGC	COGCTGCTGC	TGCTTACAAC	2350
AGAGTGCCAG	ATACTGCOCT	GTGCTTTTAC	CACCTTACCG	GCCTTTATCCA	2400
CTGGTTTGGT	CCATCTCCAT	CAGAACATCG	TGGACGTGCA	ATACTGTAC	2450
GGTGATGGGT	CAGGGTTTGT	CTCCTTTTGA	ATCAAATGGG	AGTACATCCT	2500
GTTGCTTTTT	CTTCTCCTGG	CAGACGCGCG	CGTGTGTGCC	TGCTTGTGGA	2550
TGATGCTGCT	GATAGCCAG	GCTGAGGCCG	CCTTAGAGAA	CTTGGTGGTC	2600
CTCAATGCGG	CGTCCGTGGC	CGGAGCGCAT	GGTATTTCTCT	CCTTTCTTGT	2650
GTCTCTCTGC	GOOCCCTGGT	ACATTAAAGG	CAGGCTGGCT	CCTGGGGCGG	2700
CGTATGCTTT	TTATGGCGTA	TGGCCGCTGC	TCTTGTCTCT	ACTGGCGTTA	2750
CCACCACGAG	CTTACGCTTT	GGACCGGGAG	ATGGCTGCAT	CGTGGGGGGG	2800
TGCGGTTCCT	GTAGGTCTGG	TATTCTTGAC	CTTGTCACCA	TACTACAAGA	2850
TGTTTCTCAC	TAGGCTCATA	TGGTGGTTAC	AATACTTTTAT	CACCAGAGCC	2900
GAGGCGCACA	TGCAAGTGTG	GGTCCCGCCC	CTCAAAGTTC	GGCGAGGCGG	2950
CGATGCCATC	ATCCTCCTCA	CGTGTGCGGT	TCATCCAGAG	TTAATTTTTG	3000
ACATCAACAA	ACTCCTGCTC	GCCATACTCG	GOCCGCTCAT	GGTGTCTCAG	3050
GCTGGCATAA	CGAGAGTGCC	GTACTTGTGT	CGCGCTCAG	GGCTCATTCG	3100
TGCATGCATG	TTAGTGCAG	AAGTCCCGCG	GGGTCAATTAT	GTCCAAATGG	3150
TCTTCATGAA	GCTGGGCGCG	CTGACAGGTA	CGTACGHTTTA	TACCTCATCT	3200
ACCCCACTGC	GGGACTGGGC	CCACGCGGGC	CTACGAGACC	TTGGCGTGGC	3250
GGTAGAGCCC	GTCTGTCTCT	COGCCATGGA	GACCAAGGTC	ATCACCTGGG	3300
GAGCAGACAC	CGCTGCGTGT	GGGACATCA	TCTTTGGGTCT	ACCCGCTTCC	3350
GOCCGAAGGG	GGAAGGAGAT	ATTTTTTTGG	COGGCTGATA	GTCTCGAAGG	3400
GCAAGGGTGG	CGACTCCTTG	CGCCCATCAC	GGCCTACTCC	CAACAAAGCC	3450
GGGGCGTACT	TGGTTCATC	ATCACTAGCC	TCACAGGCCG	GGACAAGAAC	3500
CAGGTCCGAG	GGGAGGTTCA	AGTGGTTTCT	ACCGCAACAC	AATCTTTTCT	3550
GGGACCTGCT	ATCAACGGGG	TGTGCTGGAC	TGCTTACCAT	GTCTCGAGGT	3600
CGAAGACCTT	AGCCCGTCCA	AAAGGTCCAA	TCACCCAAAT	GTACACCAAT	3650
GTAGACCTGG	ACCTCGTCCG	CTGGCAGGCG	COCCCGGGGG	CGCGCTCCAT	3700
GACACCATGC	AGCTGTGGCA	GCTCGGACCT	TTACTTTGGTC	ACGAGACATG	3750
CTGATGTCAT	TCCGCTGGCC	CGCCGAGGCG	ACAGCAGGGG	AAGTCTACTC	3800

FIG. 14B

HC-J4

10	20	30	40	50	
1234567890	1234567890	1234567890	1234567890	1234567890	
TCCCCAGGC	CCGTCTCCTA	CCTGAAAGGC	TCCCTGGGGTG	GTCCATTGCT	3850
TTGOCCTTGG	GGGCAAGTGG	TGGGGGCTCTT	CCGGGCTGCT	GTGTGCAACC	3900
GGGGGGTTCG	GAAGGCGGTG	GACTTTCATAC	CCGTGTAGTC	TATGGAAACT	3950
ACCATGGGGT	CTCGGGTCTT	CACAGACAAC	TCAACCCCCC	CGGCTGTATC	4000
GCAGACATTC	CAAGTGGCAC	ATCTGCAAGC	TCCCTACTGGC	AGCGGCAAGA	4050
GCACCAAGT	GCGGGCTGGG	TATGCAAGCC	AAGGGTACAA	GGTGCTCGTC	4100
CTGAACCCGT	CCGTTCGGCG	CACCTTAGGG	TTTGGGGCGT	ATATGTCCAA	4150
GGCACACGGT	ATCGACCCTA	ACATCAGAAC	TGGGGTAAAG	AOCATTACCA	4200
CGGGGGGCTC	CATTAGGTAC	TCCACCTATG	GCAAGTTTCT	TGCGGACGGT	4250
GGCTGTCTTG	GGGGCGGCTA	TGACATCATA	ATATGTGTATG	AGTGCCACTC	4300
AACTGACTCG	ACTACCATCT	TGGGCATGGG	CACAGTCTTG	GACCAAGCGG	4350
AGACGGCTGG	AGCGCGGCTG	GTCTGTCTCG	CCACCGCTAC	ACCTCCGGGA	4400
TGGGTATCCG	TGCCACACCC	CAATATCGAG	GAATAGGCC	TGTCCAACAA	4450
TGGAGAGATC	CCCTTCTATG	GCAAAAGCCAT	CCCATTGAG	GCCATCAAGG	4500
GGGGGAGGCA	TCTCATTTTC	TGCCATTCCA	AGAGAAATG	TGACGAGCTC	4550
CGCCCAAAGC	TGACAGGCTC	CGGACTGAAC	GCTGTAGCAT	ATTACCGGGG	4600
CCCTTGTGTG	TCCGTTCATC	CGCCCTATCG	AGACGTCGTT	GTCTGGCAA	4650
CAGACGCTCT	AATGACGGGT	TTCACCGGCG	ATTTTGACTC	AGTGATCGAC	4700
TGCAATACAT	GTGTCAACCA	GACAGTGCAC	TTGAGCTTGG	ATCCCACTTT	4750
CACCATTTAG	AOCAGACCG	TGCCCCAAGA	CGGGGTGTGG	CGCTCGCAAC	4800
GGCGAGGTAG	AAGTGGCAGG	GGTAGGAGTG	GCATCTACAG	GTTTGTGACT	4850
CCAGGAGAAC	GGCCCTCGGG	CATGTTCGAT	TCTTCGGTCC	TGTGTGAGTG	4900
CTATGACGGG	GGCTGTGCTT	GGTATGAGCT	CAAGCCCGCT	GAGACCTCGG	4950
TTAGGTTGGG	GGCTTACCTA	AATACACCCG	GGTTGCCCGT	CTGCCAGGAC	5000
CATCTGGAGT	TCTGGGAGAG	CGTCTTCACA	GGCTCACCC	ACATAGATGC	5050
CCACTTCCGT	TCCAGACTTA	AACAGGCGAG	AGACAACCTTT	CCTTACCTGG	5100
TGGCATATCA	AGCTACAGTG	TGCGCCAGGG	CTCAAGCTCC	ACCTCCATCG	5150
TGGGACCAA	TGTGGAAGTG	TCTCATACCG	CTGAAACCTA	CACTGCACGG	5200
GCCAACACCC	CTGCTGTATA	GGCTAGGAGC	CGTCCAAAT	GAGGTCACTC	5250
TCACACACCC	CATAACTAAA	TACATCATGG	CATGCATGTC	GGCTGACCTG	5300
GAGGTGTGTA	CTAGCACTTG	GGTGTCTGTA	GGCGGAGTCC	TTCAGCTTTT	5350
GGCCGCATAC	TGCTTGACGA	CAGGCGAGTG	GGTCATTGTG	GGCAGGATCA	5400
TCTTGTCCGG	GAGGCCAGCT	GTCTGTCCCG	ACAGGGAAGT	CCCTTACCAG	5450
GAGTTTGGAT	AGATGGAGTA	GTGTGCTCTA	CAACTTCTTT	ACATTCAGCA	5500
GGGAATGCAG	CTCGCCGAGC	AAATCAAGCA	AAAGGCGCTC	GGCTGTGTGC	5550
AAACGGCCAC	CAAGCAAGCG	GAGGCTGCTG	CTCCCGTGGT	GGAGTCCAAG	5600
TGGCGAGCCC	TTGAGACCTT	CTGGGCGAAG	CACATGTGGA	ATTTTCATCAG	5650
CGGAATACAG	TACCTAGCAG	GCTTATCCAC	TCTGCTTGA	AAACCCGCGA	5700

FIG. 14C

HC-J4

10	20	30	40	50	
1234567890	1234567890	1234567890	1234567890	1234567890	
TAGCATCAIT	GATGGCATITT	ACAGCTTCTA	TCACTAGCCC	GCTCAACCACC	5750
CAAAACACCC	TCTGTITTTAA	CATCTTGGGG	GGATGGGTTGG	CTGCCCCAACT	5800
CGCTCTCTCC	AGCGCTGCGT	CAGCTTTCTGT	GGGCGCCGGC	ATCGCGGGAG	5850
CGGCTGTITGG	CAGCATAGGC	CTTGGGAAGG	TGCTCGTGGG	CATCTTGGCG	5900
GGCTATGGGG	CAGGGGTAGC	CGGCGCACTC	GTGGCCTTTA	AGGTTCATGAG	5950
CGGCGAGGTG	CCCTCCACCG	AGGACCTGGT	CAACTTACTC	CCTGCGCATCC	6000
TCCTCTCTGG	TGCCCCGGTC	GTGCGGGTGG	TGTGCGCAGC	AATACTGGGT	6050
CGGCACTGGG	GGCCCGGGAGA	GGGGGCTGTG	CAGTGGATGA	ACCGGCTGAT	6100
AGCGTTGCGT	TGCGGGGGTA	ACCACGTCCT	CCCTAAGCAC	TATGTGCGCTG	6150
AGAGCGAGCG	TGCAGACCGT	GTCACCTCAGA	TCTCTCTTAG	CCTTACCCATC	6200
ACTCAACTGC	TGAAGCGGGT	CCACCAGTGG	ATTAAATGAGG	ACTGCTCTAC	6250
GGCATGCTCC	GGCTCTGTGG	TAAGGGATGT	TTGGGATTTG	ATATGCAACGG	6300
TGTTTACTGA	CTTCAAGACC	TGGCTCCAGT	CCAAACTCCT	CGCGGGGTTA	6350
CGGGGAGTCC	CTTTCTCTGT	ATGCCAACGC	GGGTACAAGG	GAGTCTGGCG	6400
GGGGGACGGC	ATCATGCAAA	CCACCTGCC	ATCGCGGAGC	CAGATCGCGC	6450
GACATGTCAA	AAACGGTTTC	ATGAGGATCG	TAGGGCCTAG	AACCTGCAGC	6500
AACAGCTGGC	ACCGAAAGTT	CCCCATCAAC	GCATACACCA	CGGTCACCTTG	6550
CACACCTTCC	CGGGCGCCCA	ACTATTCCAG	GGCGCTATGG	CGGGTGGCTG	6600
CTGAGGAGTA	CGTGGAGGTT	ACCGGTGTGG	GGGATTTTCA	CTACGTGACG	6650
GGCATGACCA	CTGACAACGT	AAAGTGCCCA	TGCCAGGTTT	CGGCCCCCGA	6700
ATTCTTCAAG	GAGGTGGATG	GAGTGGCGTT	GCACAGGTAC	CGTCTGGCGT	6750
GCAAACTCT	TCTACGGGAG	GACGTCAAGT	TCCAGGTGGG	GCTCAACCAA	6800
TACTTGTGTG	GGTCCGAGCT	CCCATGCGAG	CCGGAACCGG	ACGTAAACAGT	6850
GCTTACTTCC	ATGCTCAACG	ATCCCTCCCA	CATTACAGCA	GAGACGGCTA	6900
AGCGTAGGGT	GGCTAGAGGG	TCTCCCCCCT	CTTTAGCCAG	CTCATCAGCT	6950
AGCCAGTTGT	CTGCGCCTTC	TTTGAAGGGC	ACATGCACTA	CCCACCATGA	7000
CTCCCCGAC	GCTGACCTCA	TGAGGGCCAA	CCTCTTGTGG	CGGCAGGAGA	7050
TGGCGGGA	CATCATTCGC	GTTGGAGTCAG	AGAATAAGGT	AGTAATTTCTG	7100
GACTCTTTTG	AACCGCTTCA	CGCGGAGGGG	GATGAGAGGG	AGATATTCCTG	7150
CGCGCGGAG	ATCCTTGCGAA	AATCCAGGAA	GTTCCTCCCA	GGGTTGCCCA	7200
TATGGGCACG	CCCGACTAC	AATCCTCCAC	TGCTAGAGTC	CTGGAAGGAC	7250
CCGACTACG	TCCCTCCGGT	GGTACACGGA	TGCCCATTTG	CACCTACCAA	7300
GGCTCCTTCA	ATACCAOCTC	CACGGAGAAA	GAGGACGGTT	GTCTTACAGC	7350
AATCCAAATG	GTCTTCTTGC	TTGGCGGAGC	TGCGCACTAA	GACCTTCCGT	7400
AGCTCCGGAT	CGTTCGGCGT	TGATAGCGGC	ACGGCGACCG	CCCTTCTCTGA	7450
CCTGCGCTCC	GACGACGGTG	ACAAAGGATC	CGACGTTTGG	TGCTACTCCT	7500
CCATGCCCCC	CCTTGAAGGG	GAGCCGGGGG	ACCCCGATCT	CAGCGACGGG	7550
TCTTGGTCTA	CCGTGAGTGA	GGAGGCTAGT	GAGGATGTGG	TCTGCTGCTC	7600

FIG. 14D

HC-J4

10	20	30	40	50	
1234567890	1234567890	1234567890	1234567890	1234567890	
AATGTOCTAT	ACGTGGACAG	GCGCCCTGAT	CACGCCATGC	GCTGCGGAGG	7650
AAAGTAAGCT	GCCATCAAC	CGTTTGACA	ACTCTTTGCT	GCGTCAACCAC	7700
AACATGGTCT	ACGCCACAAC	ATCCCGCAGC	GCAAGCCTCC	GCGAGAAGAA	7750
GGTCACTTTT	GACAGATTGC	AAGTCTCTGA	TGATCATTAC	CGGGACGTAC	7800
TCAAGGAGAT	GAAGGCGAAG	GCGTCCACAG	TTAAGGCTAA	GCTTCTATCT	7850
ATAGAGGAGG	CCTGCAAGCT	GACGCCCCCA	CATTGGGACA	AATCCAAATT	7900
TGGCTATGGG	GCAAAGGAGC	TCGGGAACCT	ATCCAGCAGG	GCGTTTAACC	7950
ACATCCGCTC	CGTGTGGGAG	GACTTGCTGG	AAGACACTGA	AACACCAATT	8000
GACACCACCA	TCATGGCAAA	AAGTGAGGTT	TTCTGGGTCC	AACCAGAGAA	8050
GGGAGGCGCG	AAGCCAGCTC	GCCTTATCGT	ATTCCCGAGC	CTGGGAGTTC	8100
TGTATGTGGA	GAAGATGGCC	CTTTACGACG	TGGTCTCCAC	CCTTCTCAG	8150
GCGGTGATGG	GCTCCTCATA	CGGATTTCAA	TACTCCGCCA	AGCAGCGGGT	8200
CGAGTTCTCT	GTGAATAOCT	GGAAATCAAA	GAAATGCCCT	ATGGGCTTCT	8250
CATATGACAC	CCGCTGTFTT	GACTCAACGG	TCACTGAGAG	TGACATTGCT	8300
GTTGAGGAGT	CAATTTACCA	ATGTTGTGAC	TTGGCCCCCG	AGGCCAGACA	8350
GGCCATAAGG	TGCTTCACAG	AGCGGCTTTA	CATCGGGGGT	CCCTGACTA	8400
ACTCAAAGG	GCAGAAGTGC	GGTTATGCGC	GGTGCGCGCG	AAGTGGCGTG	8450
CTGACGACTA	GCTGCGGTAA	TACCTCACA	TGTTACTTGA	AGGCCACTGC	8500
AGCCTGTGCA	GCTGCAAAAG	TCCAGGACTG	CACGATGCTC	GTGAACGAG	8550
ACGACCTTGT	CGTTATCTGT	GAAAGCGCGG	GAACCCAGGA	GGATGCGCGC	8600
GCCCTACGAG	CCTTACGGA	GGCTATGACT	AGGTATTCCG	CCCCCCCCGG	8650
GGATCCGCCC	CAACCAGAAT	ACGACCTGGA	GCTGATAACA	TCATGTTTCT	8700
CCAATGTGTC	AGTCCGCGAC	GATGCATCTG	GCAAAAGGGT	ATACTAOTCT	8750
ACCCGTGACC	CCACCACCC	CCTTGCAAGG	GCTGGGTGGG	AGACAGCTAG	8800
AACACATCCA	ATCAACTCTT	GGCTAGGCAA	TATCATCATG	TATGCGGCCA	8850
CCCTATGGGC	AAGGATGATT	CTGATGACTC	ACTTTTCTCT	CATCCTTCTA	8900
GCTCAAGAGC	AACITGAAAA	AGCCCTGGAT	TGTCAGATCT	ACGGGGCTTG	8950
CTACTCCATT	GAGCCACTTG	ACCTACCTCA	GATCATTTGA	CGACTCCATG	9000
GTCTTACGCG	ATTTTACACT	CACAGTTACT	CTCCAGGTGA	GATCAATAGG	9050
GTGGCTTCAT	GCCTCAGGAA	ACTTGGGGTA	CCACCTTTCG	GAACCTTGAG	9100
ACATCGGGCC	AGAAGTGTCC	GCGCTAAGCT	ACTGTGCCAG	GGGGGGAGGG	9150
CGCCCACTTG	TGGCAGATAC	CTCTTTAACT	GGGCAGTAAG	GACCAAGCTT	9200
AAACTCACTC	CAATCCCGCG	CGCGTCCAG	CTGGACTTGT	CTGGCTGGTT	9250
CGTCGCTGGT	TACAGCGGGG	GAGACATATA	TCACAGCCTG	TTCTGTGGCC	9300
GACCCCGCTG	GTTTCCGTTG	TGCCTACTCC	TACTTTCTGT	AGGGGTAGGC	9350
ATTTTACCTGC	TCCCCAACCG	ATGAACGGGG	AGCTAACCCAC	TCCAGGCCTT	9400
AAGCCATTTC	CTGTTTTTTTT	TTTTTTTTTTT	TTTTTTTTTTT	TCTTTTTTTTT	9450
TTTCTTTTCT	TTCTTCTTTT	TTTTCTTTTC	TTTTTCTCTT	CTTTAATGGT	9500

FIG. 14E

10	20	30	40	50	
1234567890	1234567890	1234567890	1234567890	1234567890	
GGCTCCATCT	TAGCCCTAGT	CACGGCTAGC	TGTCGAAAGT	CGTCGAGCCG	9550
CATGACTGCA	GAGAGTGCTG	ATACTGGCCT	CTCTGCAGAT	CATGT	9595

FIG. 14F

HC-J4

10	20	30	40	50	
1234567890	1234567890	1234567890	1234567890	1234567890	
MSINPKPQK	TKRNIINRRPQ	DVKFPGGQI	VGGVYLLPRR	GPRLQVRATR	50
KASERSQPRG	RROPIPKARR	PEGRAWAQPG	YFWPLYGNEG	LGWAGMILLSP	100
RGRSPSWGPT	DPRRRSRNLG	KVIDTLITCGF	ADLMGYIPLV	GAPLOGAARA	150
LAHGVRVLED	GVNYATGNLP	GCSFSIFLLA	LLSCLTIPAS	AYEVRNVSGI	200
YHVINDCSNS	SIVYEADVI	MHTPGCVPCV	QEGNSSRCWV	ALTPITLAARN	250
ASVPTTITRR	HVDLLVGTAA	FCSAMYVGDL	CGSIFLVSQI	PTFSPRRHET	300
VQDCNCSTYP	GHVSGHRMAW	DMMNWSPTT	ALVVSQLLRI	PQAVVDMVAG	350
AHWGVLAGLA	YYSMVGNWAK	VLIVALLFAG	VDGEIHTTGR	VAGHITSGFT	400
SLFSSGASQK	IQLVNINGSW	HINRIALNCH	DSLQITGFFAA	LFYAHKFNSS	450
GCPERMASCR	PILWFAQGG	PITYTKFNSS	DQRPYCWHYA	PRPGVVPAS	500
QVCGPVYCFT	PSPVVVGITD	RSQVPTYSWG	ENETDMLLN	NIRPPQGNWF	550
GCTVMNSTGF	TKTCGGPPCN	IGGVGNRILI	CPIDCFRKH	EATYTKQSGG	600
PWLTIPCLVD	YPYRLWHYPC	TLNFSIFKVR	MYVGVGVEHL	NAACNWRIGE	650
RCNLEDRLRS	ELSPLLLSTT	EWQILPCAFT	TLPALSTGLI	HLHQNTVDMQ	700
YLYGVGSAFV	SFAIKWEYIL	LLFLLILADAR	VCACIAMMLL	IAQAEAALEN	750
LVLVNAASVA	GAHGISLFLV	FFCAAWYIKG	RLAPGAAYAF	YGVWPLLLLL	800
LALPPRAYAL	DREMAASCGG	AVLVGLVFLT	LSPPYKVFLT	RLIWLQYFT	850
TRAEAHMQW	VPPLNVRGGR	DAIILLTCAV	HPELIFDITK	LLLAITGLPM	900
VLQAGITRVP	YFVRAQGLR	ACMLVRKVAG	GHYVQVMFMK	LGALTGTVYV	950
NHLTPLRDWA	HAGLRDLAVA	VEPVVFSAME	TKVITWAGAT	AACGDIILGL	1000
PVSARRKEI	FLGPADSLEG	QGNLLIAPIT	AYSQQITRVL	GCITTSITGR	1050
DNQVEGEVQ	VWSTATQSFL	ATCINGVCWT	VYHGAGSKTL	AGPKGPIITQM	1100
YINVDLDLVG	WQAPPGARSM	TPCSGSSDL	YLVIRHADVI	PVRRRGDSRG	1150
SLLSPRPVSY	LKSGSGGPLL	CPSGHVGVF	RAAVCTRGA	KAVDFIPVES	1200
METIMRSFVF	TDNSTPPAVP	QTFQVAHLHA	PTGSGSKTKV	PAAYAAQGYK	1250
VLVLNPSVAA	TLGFGAYMSK	AHGIDPNIRT	GVRTITTGGS	ITYSTYGFEL	1300
ADGGCSGGAY	DIICDECHS	TDSTTILGIG	TVLDQAETAG	ARLVVLATAT	1350
PPGSVIVPHP	NIEETGLSN	GEIPFYKAI	PIEATKGRH	LIFCHSKKCC	1400
DELAATLITGL	GLNAVAYYRG	LDSVVIPIIG	DVVVATDAL	MTGFTGDFFS	1450
VIDCNICVIT	TVDFSLDPTF	TIEITITVPQD	AVSRSQRRGR	TGRCGRSGIYR	1500
FVTPGERPSG	MFDSSVLCEC	YDAGCAWYEL	TPAETSVRLR	AYLINPGLFV	1550
QDHLFEWES	VFTGLTHIDA	HFLSQIKQAG	DNFPYLVAQY	ATVCARAQAP	1600
PPSWDQMKC	LIRLKPITLHG	PTPLLYRLGA	VQNEVILTHP	ITKYIMACMS	1650
ADLEVVTSTW	VLGVGVTAL	AAYCLTTGVS	VTVGRIILSG	KPAVVPDREV	1700
LYQEFDEMEE	CASQLPYTBQ	GMQLAEQFKQ	KALGLLQAT	KQAEAAAPVW	1750
ESKWRALETF	WAKHMANFIS	GIQYLAGLST	LPGNPAIASL	MAFTASITSP	1800
LITQNTILLFN	ILGGWAAQGL	APPSAASAFV	GAGIAGAAVG	SIGLGKVLVD	1850
ILAGYGAGVA	GALVAFKMS	GEVPSTEDLV	NLLPAILSPG	ALVVGWCAA	1900

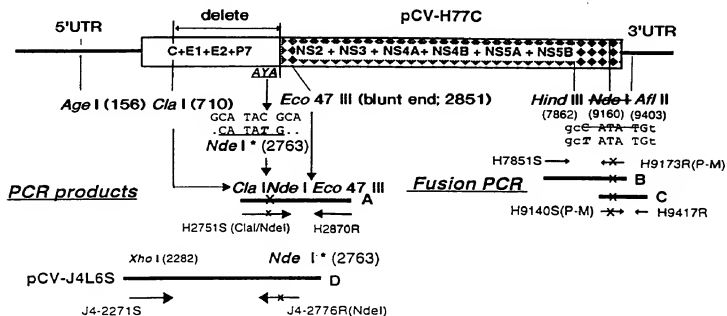
FIG. 14G

HC-J4

10	20	30	40	50	
1234567890	1234567890	1234567890	1234567890	1234567890	
ILRRHVGPE	GAVQMMNRLI	AFASRGNHVS	PIHYVPESDA	AARVTQILSS	1950
LTTIQLLKRL	HQWINEDCST	PCSGSWLRDV	WDWICTVLID	FKIWLQSKLL	2000
PRLPGVPFLS	CQRGYKGWIR	GDGIMQITTC	CGAQIAGHVK	NGSMRTVGPR	2050
TCSNIWHGTF	PINAYTTGPC	TPSPAIFYSR	ALNWRVAEEY	VEVTRVGDFH	2100
YVTGMTIDNV	KCFQVPAPE	FFTEVDGVRL	HRVAPACKPL	LREDVTFQVG	2150
LNQYLVGSQ	PCEPEPDVTV	LTSMLTDPST	ITAETAKRRL	ARGSPPSLAS	2200
SSASQLSAPS	LKATCTTHHD	SPDADLIEAN	LIWRQEMQGN	ITRVESENKV	2250
VILDSFEPLH	AECDEREISV	AAEILRKSRL	FPSALPIWAR	PJYNPPLLES	2300
WKDPDYVPPV	VHGCPLPPTK	APPIPPPRRK	RIVVLITESN	SSALAEIATK	2350
TFGSSGSSAV	DSGITATALPD	LASDDGDKGS	DVESYSSMPP	LEGEPGDPLD	2400
SDGSWSTVSE	EASEDWCCS	MSYTWIGALI	TPCAAEEKSL	PINPLSNSLL	2450
RHHNMVYATT	SRSASLRQKK	VIFDRLQVLD	DHYRDLVKEM	KAKASTVKAK	2500
LLSIEEFACKL	TPHSAKSKF	GYGAKDVRNL	SSRAVNHIRS	VWEDLLEDIE	2550
TPIDITIMAK	SEVFCVQPEK	GGRKPARLIV	FPDLGVRVCE	KMALYDVVST	2600
LPQAVMGSSY	GFQYSPKQRV	EFLVNIWWSK	KCPMGFSYDT	RCFDSIVTES	2650
DIRVEESTVQ	CCDLAPEARQ	AIRSLTERLY	IGGPLTNSKG	QNGYRRCRA	2700
SGVLITSCGN	TLTCYLKATA	ACRAAKLQDC	TMLVNGDDL	VICESAGTQE	2750
DAAALRAFTE	AMTRYSAFPG	DPPQPEYDLE	LITSCSSNWS	VAHDASGKRV	2800
YYLITRDPTT	LARAWEETAR	HTPINSWLGN	IIMYAPTLLA	RMILMIHFFS	2850
ILLAQBQLEK	ALDCQTYGAC	YSIEPLDLFQ	ITERLHGLSA	FTLHSYSPGE	2900
INRVASCLRK	LGVPLRLTWR	HRARSVRACL	LSQGGRAATC	GRYLFNNAVR	2950
TKLKLTPIPA	ASQLDLSGWF	VAGYSGGDIY	HSLSRARFRW	FPLCLLLLSV	3000
GVGYILLPNR					3010

FIG. 14H

#2. Strategy for constructing chimeric clone of HCV (pH77CV-J4) which contains the nonstructural region of strain H77 and the structural region of strain HC-J4



1. Fragment A, B, C and D ; PCR amplification from pCV-H77C or pCV-J4L6S
 - Fragment A ; additional *Cla*I site, artificial *Nde*I site induced by a single mutation (C→T at nt 2765 of H77C) and authentic *Eco*47 III site
 - Fragment B and C ; eliminated *Nde*I site by a single mutation within the primers (C→T at nt 9158 of H77C) , and fusion PCR with both fragments
 - Fragment D ; artificial *Nde*I site induced by 2 point mutations within the primer (T→A at nt 2762 and C→T at nt 2765 of J4L6S)
2. TA cloning of PCR products
3. Sequence analysis
4. Cloning of Fragment A (*Cla*I-*Eco*47III) and Fragment B/C (*Hind*III-*Afl*II) with correct sequence into pCV-H77C
5. Complete sequence analysis of new cassette vector [pH77CV], into which the structural regions of different genotypes can be inserted.
6. Cloning of Fragment-Age I/*Xho*I (cut out from pCV-J4L6S) and Fragment D (*Xho*I-*Nde*I) with correct sequence into the new cassette vector ; 3 piece ligation
7. Complete sequence analysis of 1a+1b chimera [pH77CV-J4]
8. *In vitro* transcription (within 24 hours of inoculation)
9. Percutaneous intrahepatic transfection into chimpanzee

FIG. I5

pH77CV-J4 Sequence

GCCAGCCCC	TGATGGGGG	GACACTCCAC	CATGAATCAC	TCCCTGTGA	50
GGAAGTACTG	TCTTCACGCA	GAAAGCGTCT	AGCCATGGGG	TTAGTATGAG	100
TGTCGTGCAG	CCTCCAGGAC	CCCCCTCC	GGGAGAGCCA	TAGTGGTCTG	150
CGGAACCGGT	GAGTACACCG	GAATTGCCAG	GACGACCGGG	TCTTTCTCTG	200
GATCAACCCG	CTCAATGCCT	GGAGATTGCG	GGGTGCCCC	GCGAGACTGC	250
TAGCCGAGTA	GTGTGTGGGTC	GCGAAAGGCC	TTGTGGTACT	GCTGTATAGG	300
GTGCTTGGGA	GTGCCCCGGG	AGGTCTGGTA	GACCGTGCAC	CATGAGCAAG	350
AATCCTAAAC	CTCAAAGAAA	AACCAACGT	AACACCAACC	GCGGCCACAA	400
GGACGTCAAG	TTCCCGGGCG	GTGGTCAGAT	CGTTGGTGGG	GTTTACCTGT	450
TGCCCGGCAG	GGGCCCCAGG	TTGGGTGTGC	GCGCGACTAG	GAAGGCTTCC	500
GAGCGGTGCG	AACTCGTGG	AAGGCGACAA	CCTATCCCAA	AGGCTCCCGG	550
ACCCGAGGGC	AGGGCCTGGG	CTCAGCCCGG	GTACCTTTGG	CCCTCTATG	600
GCAATGAGGG	CCTGGGGTGG	GCAGGATGGC	TCTGTTCACC	CCGCGGCTCC	650
CGGCTAGT	GGGGCCCCAC	GGACCCCCCG	CGTAGGTGCG	GTAACTTGGG	700
TAAGGTCAAT	GATACCTTTA	CATGCGGCTT	CGCGGATCTC	ATGCGGTACA	750
TTCCGCTCGT	CGGGCCCCCG	CTAGGGGGCG	CTGCCAGGGC	CTTGGCACAC	800
GGTGTCCGGG	TTCTGGAGGA	CGCGGTGAAC	TATGCAACAG	GGAACTTGCC	850
CGGTGTCTCT	TTCTCTATCT	TCTCTTTGGC	TCTGCTGTCC	TGTTTGAACA	900
TCCAGGCTTC	CGTTATGAA	GTGCGCAACG	TGTCCGGGAT	ATACCATGTC	950
ACGAACGACT	GCTCCAATCT	AAGCATTTGT	TATGAGGCAG	CGGACGTGAT	1000
CATGCATACT	CCCGGGTGCG	TGCCCTGTGT	TCAGGAGGGT	AACAGCTCCC	1050
GTTGCTGGGT	AGCGCTCACT	CCCACGCTCG	CGGCCAGGAA	TGCCACGGTC	1100
CCCACTACGA	CAATACGAG	CCACGTGCAC	TTGCTCGTTG	GGACGGCTGC	1150
TTTCTGCTCC	GCTATGTACG	TGGGGGATCT	CTGCGGATCT	ATTTTCTCTG	1200
TCTCCAGCT	GTTTCACTTC	TGGCCTGGCC	GGCATGAGAC	AGTGCAGGAC	1250
TGCAACTGCT	CAATCTATCC	CGGCCATGTA	TCAGGTCAAC	GCAATGGCTTG	1300
GGATATGATG	ATGAACGTGT	CACCTACAA	AGCCCTAGTG	GTGTCCGAGT	1350
TGCTCCGGAT	CCCAACAAGT	GTGTTGGACA	TGGTGGCGGG	GGCCCACTGG	1400
GGAGTCCCTG	CGGGCCTTGC	CTACTATTCC	ATGTTAGGGA	ACTGGGCTAA	1450
GGTTCTGATT	GTGGCGCTAC	TCTTTTGGCG	CGTTGACGGG	GAGACCCACA	1500
CGACCGGGAG	GGTGGCCCGC	CACACCACCT	CCGGTTTACC	GTCCTTTTTC	1550
TCATCTGGGG	CGTCTCAGAA	AATCCAGCTT	GTGAATACCA	ACGGCAGCTG	1600
GCACATCAAC	AGGACTGCCC	TAAATTGCAA	TGACTCCCTC	CAAACTGGGT	1650
TCTTTTGGCG	GCTGTTTTTAC	GCACACAAGT	TCAACTCGTC	CGGGTGCCCG	1700
GAGCGCATGG	CCAGCTGGCG	CCCCATTGAC	TGGTTTGCCC	AGGGGTGGGG	1750
CCCCATCACC	TATACTAAGC	CTAACAGCTC	GGATCAGAGG	CCTTATTTGCT	1800

FIG. 16A

pH77CV-J4 Sequence

GGCATTACCG	GCCTCGACCG	TGTGGTGTG	TACCCGCGTC	GCAGGTGTGT	1850
GGTCCAGTGT	ATTGTTTCAC	CCCAAGCCCT	GTGTGTGGTGG	GGACCAACGA	1900
TCGTTCCGGT	GTCCCTACGT	ATAGCTGGGG	GGAGAATGAG	ACAGACGTGA	1950
TGCTCCTCAA	CAACACCGGT	CCGCCACAAG	GCAACTGGTT	CGCTGTGTACA	2000
TGGATGAATA	GTACTGGGTT	CACTAAGAAG	TGCGGAGGTC	CCCGGTGTAA	2050
CATCGGGGGG	GTCCGTAAAC	GCACCTTGAT	CTGCCCCACG	GACTGCTTCC	2100
GGAAGCACCC	CGAGGCTACT	TACACAAAAT	GTGGCTCGGG	GCCTCGGTTC	2150
ACACCTAGGT	GCCTAGTAGA	CTACCCATAC	AGGCTTTGGC	ACTACCCCTG	2200
CACTCTCAAT	TTTTCATCT	TTAAGGTAG	GATGTATGTG	GGGGCGGTGG	2250
AGCACAGGCT	CAATGCGCA	TGCAATTGGA	CTCGAGGAGA	GGCTGTAAAC	2300
TTGGAGGACA	GGGATAGGTC	AGAACTCAGC	CCGCTGCTGC	TGCTTACAAC	2350
AGAGTGGCAG	ATACTGCCCT	GTGCTTTTAC	CACCTTACCG	GCTTTATCCA	2400
CTGGFTTGAT	CCATCTCCAT	CAGAACATCG	TGGACGTGCA	ATACCTGTAC	2450
GGTGTAGGGT	CAGCGTTTGT	CTCCTTTTGA	ATCAAAATGG	AGTACATCCT	2500
GTGTCTTTTC	CTTCTCTCG	CAGACGCGCG	CGTGTGTGCC	TGCTTTGTGA	2550
TGATGCTGCT	GATAGCCGAG	GCTGAGGCCG	CCTTAGAGAA	CTTGTGTGTC	2600
CTCAATGCGG	CGTCCGTGGC	CGGAGCGCAT	GGTATCTCT	CCTTTCTTGT	2650
GTTCCTCTGC	GCCGCTTGGT	ACATTAAAGG	CAGGCTGGCT	CCTGGGCGCG	2700
CGTATGCTTT	TTATGGCGTA	TGGCCGCTGC	TCTTCTCTCT	ACTGGCGTTA	2750
CCACCACGAG	CATATGCACT	GGACACGGAG	GTGGCCGCGT	CGTGTGGCGG	2800
CGTTGTCTTT	GTCCGGTTAA	TGGCGCTGAC	TCTGTGCGCA	TATTACAAGC	2850
GCTATATCAG	CTGGTGCATG	TGGTGGCTTC	AGTATTTTCT	GACCAGAGTA	2900
GAAGCGCAAC	TGCACTGTG	GGTTCCCCC	CTCAACGTCC	GGGGGGGGCG	2950
CGATGCGGTC	ATCTTACTCA	TGTGTGTAGT	ACACCCGACC	CTGGTATTTG	3000
ACATCACCAA	ACTACTCTTG	GOCATCTTGG	GACCCCTTTG	GATCTCTCAA	3050
GCCAGTTTGC	TTAAAGTCC	CTACTTGTG	CGCGTCAAG	GCTTCTCCG	3100
GATCTGCGCG	CTAGCGCGGA	AGATAGCCGG	AGGTCAATTAC	GTGCAAAATG	3150
CCATCTACAA	GTTAGGGGG	CTTACTGGCA	CCTATGTGTA	TAACCATCTC	3200
ACCCCTCTTC	GAGACTGGGC	GCACAACGGC	CTGCGAGATC	TGGCCGTGGC	3250
TGTGGAACCA	GTGCTCTTCT	CCCGAATGGA	GACCAAGCTC	ATCACGTGGG	3300
GGGCAGATAC	CGCCCGTGC	GGTGACATCA	TCAACGGCTT	GCCCGTCTCT	3350
GCCCGTAGGG	GCCAGGAGAT	ACTGCTTTGG	CCAGCCGAGC	GAATGGTCTC	3400
CAAGGGGTGG	AGGTTGCTGG	CGCCCATCAC	GGCGTACGCC	CAGCAGACGA	3450
GAGGCTCTCT	AGGGTGTATA	ATCACCAGCC	TGACTGGCCG	GGACAAAAAC	3500
CAAGTGGAGG	GTGAGGTCCA	GATCGTGTCA	ACTGCTACCC	AAACCTTCTCT	3550
GGCAACGTGC	ATCAATGGGG	TATGCTGGAC	TGTCTTACCAC	GGGGCCCGAA	3600

FIG. I6B

pH77CV-J4 Sequence

CGAGGACCAT	CGCATCACCC	AAGGGTCTTG	TCATCCAGAT	GTATACCAAT	3650
GTGGACCAAG	ACCTTGTGGG	CTGGCCCGCT	CCTCAAGGTT	CCCGCTCATT	3700
GACACCCGTG	ACCTCGGGCT	CCTCGGACCT	TTACCTGGTC	ACGAGGCACG	3750
CCGATGTGAT	TCCGTGTGGC	CGGCGAGGTG	ATAGCAGGGG	TACGCTGCTT	3800
TCGCCCCGGC	CCATTTCTCTA	CTTGAAAGGC	TCCTCGGGGG	GTCGCTGTGT	3850
GTGCCCCCGG	GGACACGCGG	TGGGCTTATT	CAGGGCCCGG	GTGTGCACCC	3900
GTGGAGTGGC	TAAAGCGGTG	GACTTTTATC	CTGTGGAGAA	CCTAGGGACA	3950
ACCATGAGAT	CCCCGGTGT	CACGGACAAC	TCCTCTCCAC	CAGCAGTGCC	4000
CCAGAGCTTC	CAGGTGGGCC	ACCTGCATGC	TCCACCGGC	AGCGGTAAGA	4050
GCACCAAGGT	CCCGGCTGGG	TACCGAGCCC	AGGGCTACAA	GGTGTGTGGT	4100
CTCAACCCCT	CTGTGTGCTG	AAOGCTGGGC	TTTGGTGCCT	ACATGTCCAA	4150
GGCCCATGGG	GTTCATCTTA	ATATCAGGAC	CGGGGTGAGA	ACAATTACCA	4200
CTGGCAGGCC	CATCACGTAC	TCCACTACG	GCAAGTTCT	TGCCGACGGC	4250
GGGTGCTCAG	GAGGTGCTTA	TGACATAATA	ATTTGTGACG	AGTGCCACTC	4300
CACGGATGCC	ACATCCATCT	TGGGCATCGG	CAGTGTCTCT	GACCAAGCAG	4350
AGACTGGGGG	GGCGGACTG	GTGTGCTCG	CCACTGCTAC	CCCTCCGGGC	4400
TCCGTCACTG	TGTCCCATCC	TAACATCGAG	GAGGTGTCT	TGTCCACCAC	4450
CGGAGAGATC	CCCTTTTACG	GCAAGGCTAT	CCCCCTCGAG	GTGATCAAGG	4500
GGGGAAGACA	TCTCATCTTC	TGCCACTCAA	AGAAGAAGTG	CGACGAGCTC	4550
GCCCGGAAC	TGGTCGCATT	GGGCATCAAT	GCCGTGGGCT	ACTACCGGG	4600
TCCTTGACGTG	TCGTGTCATC	CGACCAGCGG	CGATGTTGTC	GTGCTGTGGA	4650
CCGATGCTCT	CATGACTGGC	TTTACCGGG	ACTTGACTC	TGTGATAGAC	4700
TGCAACACGT	GTGTCACTCA	GACAGTCGAT	TTCAGCCTTG	ACCTTACCTT	4750
TACCATTGAG	ACAACCAGC	TCCCCCAGGA	TGCTGTCTCC	AGGACTCAAC	4800
GCCGGGGCAG	GACTGGCAGG	GGGAAGCCAG	GCACTCTATAG	ATTTGTGGCA	4850
CCGGGGGAGC	GGCCCTCCGG	CATGTTGAC	TGCTCCGTCC	TCGTGTAGTG	4900
CTATGACGGG	GGCTGTGCTT	GGTATGAGCT	CACGCCCGCC	GAGACTACAG	4950
TTAGGCTACG	AGCGTACATG	AACACCCCGG	GGCTTCCCGT	GTGCCAGGAC	5000
CATCTTTGAAT	TTTGGGAGGG	CGTCTTTACG	GGCCTCACTC	ATATAGATGC	5050
CCACTTTTTA	TCCCAGACAA	AGCAGAGTGG	GGAGAACCTT	CTCTTACCTG	5100
TGCGTACCA	AGCCACCGTG	TGCGCTAGGG	CTCAAGCCCC	TCCCCCATCG	5150
TGGGACCAGA	TGTGGAAGTG	TTTGATCCGC	CTTAAACCCA	CCCTCCATGG	5200
GCCACACCCC	CTGCTATATA	GACTGGGGCC	TGTTACGAAT	GAAGTCACCC	5250
TGACGCACCC	AATCACCAAA	TACATCATGA	CATGCATGTC	GGCCGACCTG	5300
GAGGTGTCAC	CGAGCACCTG	GGTGCTCGTT	GGCCGGGTCC	TGGCTGCTCT	5350
GGCCGCGTAT	TGCCGTGTCAA	CAGGCTGGGT	GGTCATAGTG	GGCAGGATCG	5400

FIG. 16C

pH77CV-J4 Sequence

TCTTGTCGG	GAAGCCGGCA	ATTATACCTG	ACAGGGAGGT	TCTCTACCAG	5450
CAGTTGATG	AGATGGAAGA	GTGCTCTCAG	CACTTACCGT	ACATCGAGCA	5500
AGGGATGATG	CTCGCTGAGC	AGTTCAAGCA	GAAGGCCCTC	GGCCTCCTGC	5550
AGACCGGTC	CCGCCATGCA	GAGGTTATCA	CCCCTGCTGT	CCAGACCAAC	5600
TGGCAGAAAC	TGGAGGTTT	TTGGGGGAAG	CACATGTGGA	ATTTCATCAG	5650
TGGGATACAA	TACTTGGGG	GCTTGTCAC	GCTGCTGGT	AACCCCGCCA	5700
TTGCTTCATT	GATGGCTTTT	ACAGCTGCG	TCACGAGCC	ACTAACCACT	5750
GGCCAAACCC	TCTCTTCAA	CATATTGGGG	GGGTGGGTGG	CTGCCAGCT	5800
CGCCGCCCC	GGTGCCGCTA	CTGCCCTTGT	GGGTGCTGGC	CTAGCTGGCG	5850
CGGCATCGG	CAGCGTTGGA	CTGGGAAGG	TCCTGTGGA	CATTCTTGCA	5900
GGGTATGGCG	CGGGGTGGC	GGGAGCTCTT	GTAGCATTCA	AGATCATGAG	5950
CGGTGAGGTC	CCCTCCACGG	AGGACCTGGT	CAATCTGCTG	CCGCCATCC	6000
TCTCGCTGG	AGCCCTTGTA	GTCCGTGTGG	TCTGCGCAGC	AATACTGCGC	6050
CGGCACGTTG	GCCCGGGCGA	GGGGGAGTG	CAATGGATGA	ACCGGCTAAT	6100
AGCCTTCGCC	TCCCGGGGGA	ACCATGTTTC	CCCCACGCAC	TACGTGCGCG	6150
AGAGCGATGC	AGCCGCCCCG	GTCACTGCCA	TACTCAGCAG	CCTCACTGTA	6200
ACCCAGCTCC	TGAGGCGACT	GCATCAGTGG	ATAAGCTCGG	AGTGTACAC	6250
TCCATGCTCC	GGTTCCTGGC	TAAGGGACAT	CTGGGACTGG	ATATGCGAGG	6300
TGCTGAGCGA	CTTTAAGACC	TGGCTGAAAG	CCAAGCTCAT	GCCACAACCTG	6350
CCTGGGATTC	CCTTTGTGTC	CTGCCAGCGC	GGGTATAGGG	GGGTCTGGCG	6400
AGGAGACGGC	ATTATGCACA	CTCGCTGCCA	CTGTGGAGCT	GAGATCACTG	6450
GACATGTCAA	AAACGGGAGC	ATGAGGATCG	TCCGTCTTAG	GACCTGCAGG	6500
AACATGTGGA	GTGGGACGTT	CCCCATTAAAC	GCCTACACCA	CGGGCCCCCTG	6550
TACTCCCCCTT	CCTGCGCGCA	ACTATAAGTT	CGCCCTGTGG	AGGGTGTCTG	6600
CAGAGGAATA	CGTGGAGATA	AGGCGGGTGG	GGGACTTCCA	CTACGTATCG	6650
GGTATGACTA	CTGACAATCT	TAAATGCCCG	TGCCAGATCC	CATCGCCCGA	6700
ATTTTTCACA	GAATTGGACG	GGGTGCGCCT	ACACAGGTTT	GCGCCCCCTT	6750
GCAAGCCCTT	GCTGCGGGAG	GAGGTATCAT	TCAGAGCTAG	ACTCCAGAG	6800
TACCCGGTGG	GGTGGCAATT	ACCTTGCGAG	CCCGAACCGG	AGGTAGCCGT	6850
GTGTAGGTTCC	ATGCTCACTG	ATCCCTCCCA	TATAACAGCA	GAGCGCGCCG	6900
GGAGAGGTTT	GGCGAGAGGG	TCACCCCTTT	CTATGGCCAG	CTCCTCGGCT	6950
AGCCAGCTGT	CCGCTCCATC	TCTCAAGGCA	ACTTGACCCG	CCAACCATGA	7000
CTCCCTTGAC	GCCGAGCTCA	TAGAGGCTAA	CCTCCTGTGG	AGGCAGAGAG	7050
TGGCGGCAAA	CATCACCAGG	GTGTAGTTCAG	AGAACAAAGT	GGTGATTCTG	7100
GACTCCTTCG	ATCCGCTTGT	GGCAGAGGAG	GATGAGCCGG	AGGTCTCCGT	7150
ACCTGCAGAA	ATTCTGCGGA	AGTCTCGGAG	ATTGCCCCCG	GCCCTGCCCG	7200

FIG. 16D

pH77CV-J4 Sequence

TCTGGGCGCG	GCCGGACTAC	AACCCCCCGC	TAGTAGAGAC	GTGGAAAAAG	7250
CCTGACTACG	AACCACTGT	GGTCCATGGC	TGCCCCGTAC	CACCTCCACG	7300
GTCCCTCTCT	GTGCTCCGC	CTCGGAAAAA	GCGTACGGTG	GTCCTCACCG	7350
AATCAACCTT	ATCTACTGCC	TTGGCCGAGC	TTGCCACCAA	AAGTTTITGGC	7400
AGCTCCTCAA	CTTCCGGCAT	TACGGGCGAC	AATAAGACAA	CATCCTCTGA	7450
GCCCGCCCTT	TCITGGCTGCC	CCCCCGACTC	CGACGTTGAG	TOCTATCTCT	7500
CCATGCCCCC	CCTGGAGGGG	GAGCTGGGG	ATCCGGATCT	CAGCGACGGG	7550
TCATGGTCCA	CGGTACGTAG	TGGGGCCGAC	ACCGAAGATG	TGCTGTGCTG	7600
CTCAATGTCT	TATTTCTTGA	CAGGCGCACT	CGTCAACCCG	TGCGCTGGCG	7650
AAGAACAATA	ACTGCCCATC	AACGCACTGA	GCAACTCGTT	GCTACGCCAT	7700
CACAATCTGG	TGTATTCCAC	CACCTTCACG	AGTGCCTGCC	AAAGGCAGAA	7750
GAAAGTCACA	TTTGACAGAC	TGCAAGTTCT	GGACAGCCAT	TACCAGGACG	7800
TGCTCAAGGA	GGTCAAGCA	GCGGCGTCAA	AAGTGAAGGC	TAACTTGTCTA	7850
TCCGTAGAGG	AAGCTTGCAG	CCTGACGCC	CCACATTCAG	CCAAATCCAA	7900
GTITGGCTAT	GGGGCAAAAG	ACGTCCGTTG	CCATGCCAGA	AAGGCCGTAG	7950
CCCACATCAA	CTCCGTGTGG	AAAGACCTTC	TGGAAGACAG	TGTAACACCA	8000
ATAGACACTA	CCATCATGGC	CAAGAAGCAG	GTITTTCTGG	TTTACGCTGA	8050
GAAGGGGGGT	CGTAAGCCAG	CTCGTCTCAT	CGTGTTCGCC	GACCTGGGCG	8100
TGCGCGTGTG	CGAGAAGATG	GCCCTGTACG	ACGTGGTTAG	CAAGCTCCCC	8150
CTGCGCGTGA	TGGGAAGCTC	CTACGGATTC	CAATACTCAC	CAGGACAGCG	8200
GGTTGAATTC	CTCGTCCAAG	CGTGAAGTTC	CAAGAAGACC	CCGATGGGGT	8250
TCTCGTATGA	TACCCCGTGT	TTTGACTCCA	CAGTCACTGA	GAGCGACATC	8300
CGTACGGAGG	AGGCAATTTA	CCAATGTGTG	GACCTGGACC	CCCAAGCCCG	8350
CGTGGCCATC	AAGTCCCTCA	CTGAGAGGCT	TTATGTTTGG	GGCCCTCTTA	8400
CCAATTCAG	GGGGGAAAAC	TGCGGCTACC	GCAGGTGCCG	CGCGAGCGGC	8450
GTACTGACAA	CTAGCTGTGG	TAACACCTTC	ACTTGTCTACA	TCAAGGCCCG	8500
GGCAGCCTGT	CGAGCCGCG	GGCTCCAGGA	CTGCACCATG	CTCGTGTGTG	8550
GCGACGACTT	AGTGTGTATC	TGTGAAAGTG	CGGGGCTCCA	GGAGGACGCG	8600
GCGAGCCTGA	GAGCCTTCAC	GGAGGCTATG	ACCAGGTACT	CCGCCCCCCC	8650
CGGGGACCCC	CCACAACCAG	AATACGACTT	GGAGCTTATA	ACATCATGCT	8700
CCTCCACCGT	GTCAGTCCGC	CACGACGGCG	CTGGAAAGAG	GGTCTACTAC	8750
CTTACCCGTG	ACCTTACAAT	CCCCCTCCCG	AGAGCCCGGT	GGGAGACAGC	8800
AAGACACACT	CCAGTCAATT	CCTGGCTAGG	CAACATAATC	ATGTTTGGCC	8850
CCACACTGTG	GGCGAGGATG	ATACTGATGA	CCCATTTCTT	TAGCGTCTCT	8900
ATAGCCAGGG	ATACGCTTCA	ACAGGCTCTT	AACGTGTGGA	TCTACGGAGC	8950
CTGCTACTCC	ATAGAACCAC	TGGATCTTACC	TCCAATCATT	CAAAGACTCC	9000

FIG. 16E

pH77CV-J4 Sequence

ATGGCCTCAG	CGCATTTTCA	CTCCACAGTT	ACTCTCCAGG	TGAAATCAAT	9050
AGGGTGGCCG	CATGCCTCAG	AAAACCTTGG	GTCCCGCCCT	TGCGAGCTTG	9100
GAGACAACGG	GCCCCGAGCG	TCCGCGCTAG	GCTTCCTGTC	AGAGGAGGCA	9150
GGGCTGCTAT	ATGTGGCAAG	TACCTCTTCA	ACTGGGCAGT	AAGAACAAG	9200
CTCAAACICA	CTCCAATAGC	GGCGCTGGC	CGGCTGGACT	TGTCCGGTGT	9250
GTTCACGGCT	GGCTACAGCG	GGGGAGACAT	TTATCACAGC	GTGTCTCATG	9300
CCCGGCCCGG	CTGGTCTTGG	TTTTGCCTAC	TCCTGCTCGC	TGCAGGGGTA	9350
GGCATCTACC	TCCTCCCCAA	CCGATGAAGG	TTGGGGTAAA	CACTCCGGCC	9400
TCTTAAGCCA	TTTCTGTGTT	TTTTTTTTTT	TTTTTTTTTT	TTTTTCTTTT	9450
TTTTTTTCTT	TCCTTTCTTT	CTTTTTTTTC	TTTCTTTTTC	CTTCTTTTAA	9500
TGGTGGCTCC	ATCTTAGCCC	TAGTACGGC	TAGCTGTGAA	AGGTCCGTGA	9550
GCCGCATGAC	TGCAGAGAGT	GCTGATACTG	GCCTCTCTGC	AGATCATGT	9599

FIG. 16F

H77CV-J4aa Sequence

10	20	30	40	50	
1234567890	1234567890	1234567890	1234567890	1234567890	
MSINEKPKQRK	TKRNINRRPQ	DKFPEGGGQI	VGVVYLLEPR	GERLQVRATR	50
KASERSQPRG	RQQPIPKARR	PEGRAWAQPG	YFWPLYGNEG	LGWAGWLLSP	100
RGSRPSWGPT	DPRRRSRNLG	KVIDITLTCGF	ADLMGYTLPV	GAPLQGAARA	150
LAHGVRVLED	GVNYATGNLP	GCSFSIFLLA	LLSCLTIPAS	AYEVRNVSGI	200
YHVINDCSNS	SIVYEADVI	MHTPGCVPCV	QEGNSSRCW	ALTPILAARN	250
ASVPTTTIRR	HVDLLVGTA	FCSAMYVGD	CGSIFLVSQ	FTFSPRRHET	300
VQDQNCSTYP	GHVSGHRMAW	IMMNWSPTT	ALVVSQLLRI	PQAVVDMVAG	350
AHWGVLAGLA	YYSMVGNMAK	VLTVALLFAG	VDGEITHITGR	VAGHITSGET	400
SLFSSGASQK	IQLWNINGSW	HINRTALN	DSLQITGFFAA	LFYAHKFNSS	450
GCPERMASCR	PIDWFAGQAG	PITYTKPNSS	DQRPYCWHYA	FRPCGVVPAS	500
QVCGFVYCF	PSFVVGITD	RSQVPTYSWG	ENETDMLNL	NIRPFQGNWF	550
GCIWMNSTGF	TKTCGGPFCN	IGGVGNRTLI	CPITDCFRRHP	EATYTKCGSG	600
PWLTPRCLVD	YPYRLWHYPC	TLNFSIFKVR	MYVGGVEHRL	NAACNWTGR	650
RCNLEDRDRS	ELSPLLLSTT	EWQILPCAFT	TLPALSTGLI	HLHQNLVDVQ	700
YLYGVGSFAV	SFAIKWEYIL	LLFLLADAR	VCACLWMLL	IAQAEAALEN	750
LVVLNAASVA	GAGHILSFLV	FFCAAWYIKG	RLAPGAAYF	YGVWPLILLL	800
LALPPRAYAL	DTEVAASCGG	VVLVGLMALT	LSPYKYKRTS	WCMWWLQYFL	850
TRVEAQLHW	VPLNVRGGR	DAVILLMCVV	HPILVFDITK	LLLAIFGPLW	900
ILQASLLKVP	YFVRVQGLLR	ICALARKIAG	GHVQMAITK	LGALTGTIVY	950
NHLTPLRDWA	HNGRLDLAVA	VEPVVFSRME	TKLITWGADE	AACGDIINGL	1000
FVSARRGQEI	LLGPDGMVS	KQWRLAPIT	AYAQQITRGLL	GCIITSLITGR	1050
DKNQVEGEVQ	IVSTATQITFL	ATCINGVCWT	VYHGAGTRTI	ASPKGPIVQM	1100
YTNVDQDLVG	WPAFQGSRLS	TECTCGSSDL	YLVTRHADVI	PVRRRGDSRG	1150
SLLSRPISY	LKGSSGGPLL	CPAGHAVGLF	RAAVCTRGA	KAVDFIFVEN	1200
LGTIMRSPVF	TDNSSPPAVP	QSFQVAHLHA	PTGSGKSTKV	PAAYAAQGYK	1250
VLVLNPSVAA	TLGFGAYMSK	AHGVDENIRT	GVRTTTTGSP	ITYSTYKGF	1300
ADGGCSGGAY	DIIICDECHS	TDATSI LGIG	TVLDQAETAG	ARLVVLATAT	1350
PGFSVIVSHP	NIEEVALSTT	GEIPFYGKAI	PLEVIKGGRR	LIFCHSKKKC	1400
DELAALKVAL	GINAVAYYRG	LDSVVIPTSG	DVVVVSTDAL	MIGFTIGDFS	1450
VIDCNTCVTQ	TVDFSLDPTF	TIETTTILPQD	AVSRTQRRGR	TGRGKPGIYR	1500
FVARGERP	MGDSSVLCEC	YDAGCAWYEL	TPAETTVRLR	AYMNTPLGLV	1550
QQDHLFEWEG	VFTGLTHIDA	HFLSQTKQSG	ENFPYLVAVQ	ATVCARAQAP	1600
PPSWDQMAK	LIRLKPTLHG	PTPLLYRLGA	VQNEVTLIHP	ITKYITMCS	1650
ADLEVMTSTW	VLGVGVLAAL	AAYCLSTGCV	VIVGRIVLSG	KPAIIPDREV	1700
LYQEFDEMEE	CSQHLPIYIEQ	GMMLAEQFKQ	KALGLLQTAS	RHAEVITPAV	1750
QINWQKLEVF	WAKHMANFIS	GIQYLACLST	LFGNPAIASL	MAFTAAVTSP	1800
LITGQTLLFN	ILGGWAAQL	AAPGAATAFV	GAGLAGAAIG	SVGLGKVLVD	1850
ILAGYGAGVA	GALVAFKIMS	GEVPSTEDLV	NLLPALISPG	ALVVGVCVCA	1900

FIG. 16G

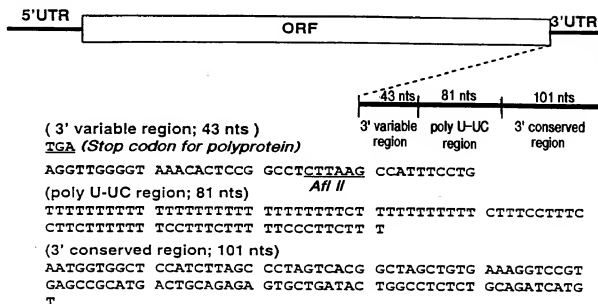
H77CV-J4aa Sequence

10	20	30	40	50	
1234567890	1234567890	1234567890	1234567890	1234567890	
ILRRHVGPGE	GAVQWMNRLI	AFASRGNHVS	PIHYVPESDA	AARVTATLSS	1950
LTVIQLLRRL	HQWISSECTT	PCSGSWLRDI	WDWICEVLSD	FKIWLKAKIM	2000
PQLPGIPFVS	QQRGYRGWWR	GDGIMHTRCH	CGAETITGHVK	NGIMRIVGPR	2050
TCRNMWSGIT	PINAYTITGPC	TPLPAPNYKF	ALWRVSAEEY	VEIRRVGDFH	2100
YVSGMTITNL	KCPQCIPSPE	FFTELDGVRL	HRFAPPCKPL	LREEVSFVRG	2150
LHEYFVGSQQL	PCEPEPDVAV	LITSMITDPSH	ITAEAAGRRL	ARGSPPSMAS	2200
SSASQLSAPS	LKATCTANHD	SPDAELTEAN	LLWRQEMGQN	ITRVESENKV	2250
VILDSFDPLV	AEEDEREVS	PAETLRKSRR	FARALPWAR	PDYNPLVET	2300
WKKEPDYEPV	VHGCPLPPPR	SPPVPPPRKK	RIVVLTESTL	STALAEATK	2350
SFGSSSTSGI	TGINTTISSE	PAPSGCPPDS	DVESYSSMPP	LEGEPCDPL	2400
SDGSWSTVSS	GADTEDVCC	SMSYSWTGAL	VTPCAEEQK	LPINALSNL	2450
LRHHNLVYST	TSRSACQQRK	KVTFDRLQVL	DSHYQDVLKE	VKAAASKVKA	2500
NLLSVEEACS	LITPPHSAKSK	FGYGAKDVRC	HARKAVAHIN	SVWKDLLEDS	2550
VTPIDITTIMA	KNEVFCVQPE	KGGRKPARLI	VFPDLGVRVC	EKMALYDWS	2600
KLPLAVMGSS	YGFQYSPGQR	VEFLVQAWKS	KKTPMGFSYD	TRCFDSTVTE	2650
SDIRTEEATY	QCCDLDPQAR	VAIKSLTERL	YVGGLPINSR	GENCGYRRCR	2700
ASGVLITTSOG	NILITCYIKAR	AACRAAGLQD	CIMLVCGDDL	WTICESAGVQ	2750
EDAASLRAFT	EAMTRYSAAPP	GDPPQPEYDL	ELITSCSSNV	SVAHDGAGKR	2800
VYYLTRDPIT	PLARAANETA	RHTPNSWLWG	NIIMFAPITLW	ARMILMIHFF	2850
SVLIARDQLE	QALNCEITYGA	CYSIEPLDLP	PIIQRLHGLS	AFSLHSYSPG	2900
EINRVAACLR	KLGVPPPLRAW	RHRARSVRAR	LLSRGGRAAI	CGKYLEFNWAV	2950
RTKIKLITPIA	AAGRLDLSGW	FTAGYSGGDI	YHSVSHARPR	WFWFCILLLA	3000
AGVGIIYLLFN	R				3011

FIG. 16H

#1a. 3' Deletion mutants of pCV-H77C

Sequence of 3' untranslated region of pCV-H77C



#1a -1. pCV-H77C(-98X) ; 3' 98 nucleotides removed from pCV-H77C

TGAAGGTTGG GGTAAACACT CCGGCCTCTT AAGCCATTTC CTGTTTTTTT
 TTTTTTTTTT TTTTTTTTTT TCCTTTTTTT TTTCTTTCCT TTCCTTCTTT
 TTTTCCTTTC TTTTCCCTT CTTAAT

#1a -2. pCV-H77C(-42X) ; 3' 42 nucleotides removed from pCV-H77C

TGAAGGTTGG GGTAAACACT CCGGCCTCTT AAGCCATTTC CTGTTTTTTT
 TTTTTTTTTT TTTTTTTTTT TCCTTTTTTT TTTCTTTCCT TTCCTTCTTT
 TTTTCCTTTC TTTTCCCTT CTTAATGGT GGCTCCATCT TAGCCCTAGT
 CACGGCTAGC TGTGAAAGGT CCGTGAGCCG CAT

#1a -3. pCV-H77C(X-52) ; All of the 3' UTR sequence, except 3' 49 nucleotides, removed from pCV-H77C

TGAGCCGCAT GACTGCAGAG AGTGCTGATA CTGGCCTCTC TGCAGATCAT
 GT

FIG. 17A

123456789101112131415161718192021222324252627282930313233343536373839404142434445464748495051525354555657585960616263646566676869707172737475767778798081828384858687888990919293949596979899100

#1a -4. pCV-H77C(X) ; All of the 3' UTR sequence, except 3' 101 nucleotides, removed from pCV-H77C

TGAAATGGTG GCTCCATCTT AGCCCTAGTC ACGGCTAGCT GTGAAAGGTC
CGTGAGCCGC ATGACTGCAG AGAGTGCTGA TACTGGCCTC TCTGCAGATC
ATGT

#1a -5. pCV-H77C(+49X) ; The proximal 49 nucleotides of the 3' conserved region (98 nucleotides ; AAT not included) removed from pCV-H77C

TGAAGGTTGG GGTAAACACT CCGGCCTCTT AAGCCATTTC CTGTTTTTTT
TTTTTTTTTT TTTTTTTTTT TCTTTTTTTT TTCTTTCCT TTCCTTCTTT
TTTCCCTTC TTTTCCCTT CTTAATGCC GCATGACTGC AGAGAGTGCT
GATACTGGCC TCTCTGCAGA TCATGT

#1a -6. pCV-H77C(VR-24) ; First 24 nucleotides of the 3' variable region removed from pCV-H77C

TGACTTAAGC CATTTCCTGT TTTTTTTTTT TTTTTTTTTT TTTTTTCTT
TTTTTTTTTC TTTCCCTTCC TTCTTTTTTT CCTTCTTTT TCCTTCTTT
AATGGTGGCT CCATCTTAGC CCTAGTCACG GCTAGCTGTG AAAGGTCGGT
GAGCCGCATG ACTGCAGAGA GTGCTGATAC TGGCCTCTCT GCAGATCATG
T

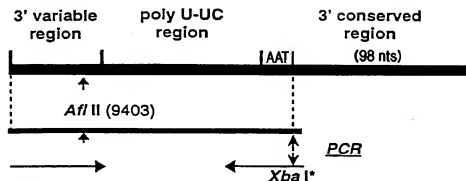
#1a -7. pCV-H77C(-U/UC) ; Poly U-UC region removed from pCV-H77C

TGAAGGTTGG GGTAAACACT CCGGCCTCTT AAGCCATTTC CTGAATGGTG
GCTCCATCTT AGCCCTAGTC ACGGCTAGCT GTGAAAGGTC CGTGAGCCGC
ATGACTGCAG AGAGTGCTGA TACTGGCCTC TCTGCAGATC ATGT

FIG. 17B

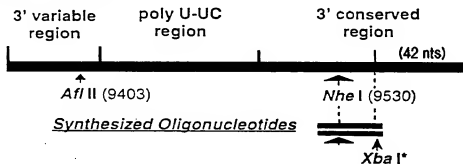
#1b. Strategy of 3' Deletion mutants

#1b -1. pCV-H77C(-98X)



1. PCR Amplification
2. Purification of PCR products
3. Digestion with *Afl* II and *Xba* I
4. Cloning of *Afl* II / *Xba* I fragment into pCV-H77C
5. Complete sequence analysis
6. in vitro transcription (within 24 hours of inoculation)
7. Percutaneous intrahepatic transfection into chimpanzee ; 11/26/97 and 12/17/97
8. Result : Negative (No replication)

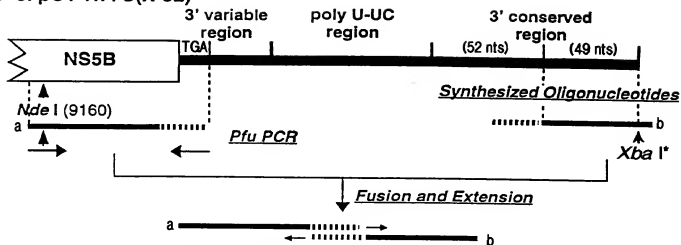
#1b -2. pCV-H77C(-42X)



1. Synthesis of oligonucleotides (sense and anti-sense)
2. Hybridization of oligonucleotides
3. Digestion with *Nhe* I and *Xba* I
4. Cloning of *Nhe* I / *Xba* I fragment into pG9-KL26 (3' UTR of H77C)
5. Sequence analysis
6. Cloning of 3' UTR (-42X) [*Afl* II / *Xba* I fragment] into pCV-H77C
7. Complete sequence analysis
8. in vitro transcription (within 24 hours of inoculation)
9. Percutaneous intrahepatic transfection into chimpanzee (Schedule; 1/22/98, 2/5/98)

FIG. 17C

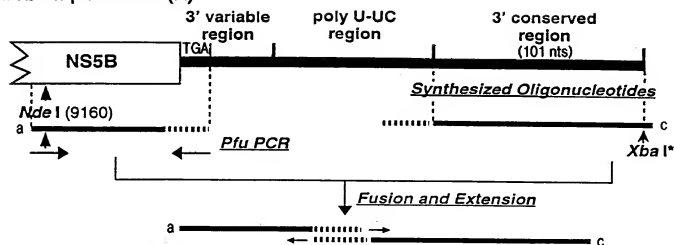
#1b -3. pCV-H77C(X-52)



1. Fragment a ; *Pfu* PCR amplification and purification
2. Fragment b ; Synthesized oligonucleotides (anti-sense)
3. Fusion and extension
4. TA cloning
5. Sequence analysis
6. Cloning *Nde* I-*Xba* I fragment with correct sequence into pCV-H77C
7. Complete sequence analysis
8. *In vitro* transcription (within 24 hours of inoculation)
9. Percutaneous intrahepatic transfection into chimpanzee

FIG. 17D

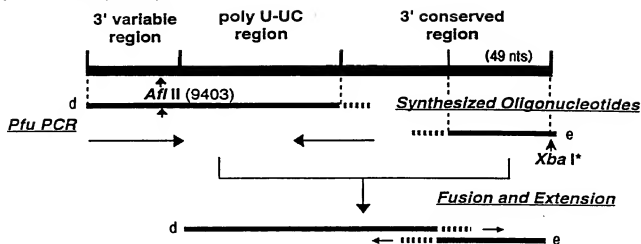
#1b -4. pCV-H77C(X)



1. Fragment a ; *Pfu* PCR amplification and purification
2. Fragment c ; Synthesized oligonucleotides (anti-sense)
3. Fusion and extension
4. TA cloning
5. Sequence analysis
6. Cloning *Nde* I-*Xba* I fragment with correct sequence into pCV-H77C
7. Complete sequence analysis
8. *In vitro* transcription (within 24 hours of inoculation)
9. Percutaneous intrahepatic transfection into chimpanzee

FIG. 17E

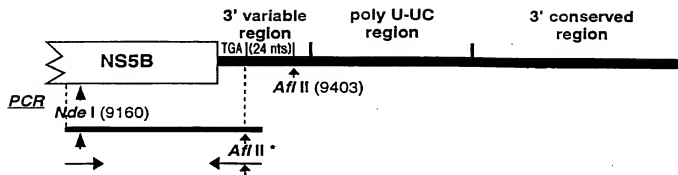
#1b -5. pCV-H77C(+49X)



1. Fragment d ; *Pfu* PCR amplification and purification
2. Fragment e ; Synthesized oligonucleotides (anti-sense)
3. Fusion and extension
4. TA cloning
5. Sequence analysis
6. Cloning *Afl* II-*Xba* I fragment with correct sequence into pCV-H77C
7. Complete sequence analysis
8. *In vitro* transcription (within 24 hours of inoculation)
9. Percutaneous intrahepatic transfection into chimpanzee

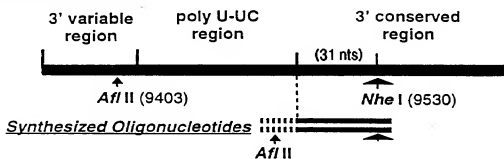
FIG. 17F

#1b -6. pCV-H77C(VR-24)



1. PCR Amplification
2. Purification of PCR products
3. Digestion with *Nde* I and *Afl* I
4. Cloning of *Nde* I / *Afl* II fragment into pCV-H77C
5. Complete sequence analysis
6. in vitro transcription (within 24 hours of inoculation)
7. Percutaneous intrahepatic transfection into chimpanzee

#1b -7. pCV-H77C(-U/UC)



1. Synthesis of oligonucleotides (sense and anti-sense)
2. Hybridization of oligonucleotides
3. Digestion with *Afl* II and *Nhe* I
4. Cloning of *Afl* II and *Nhe* I fragment into pG9-KL26
5. Sequence analysis
6. Cloning of 3' UTR (-poly U-UC) [*Afl* II / *Xba* I fragment] into pCV-H77C
7. Complete sequence analysis
8. in vitro transcription (within 24 hours of inoculation)
9. Percutaneous intrahepatic transfection into chimpanzee

FIG. 17G

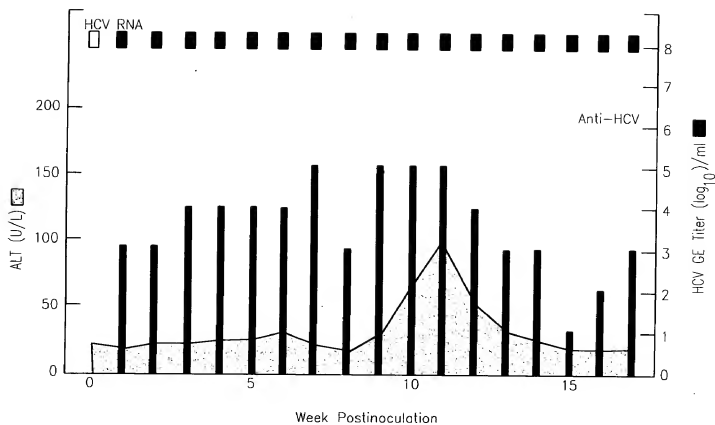


FIG. 18A

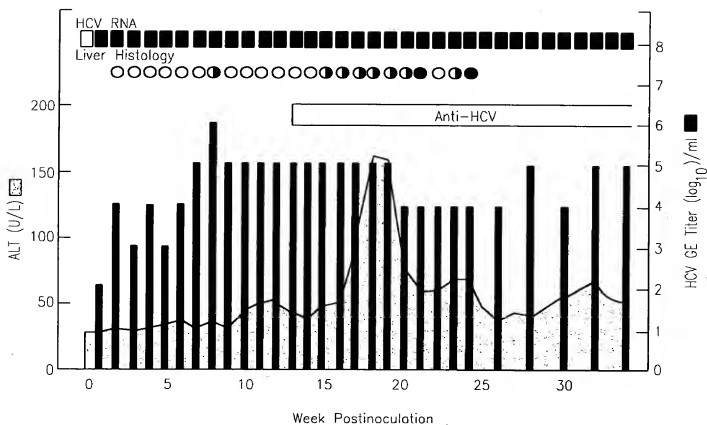


FIG. 18B